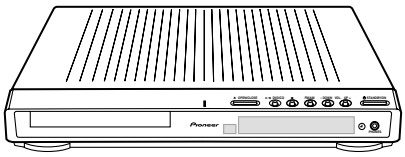
Pioneer sound.vision.soul

# Service Manual



XV-DV740

ORDER NO.
**RRV2946**

## DVD/CD RECEIVER

# XV-DV740
# XV-DV440

### THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Model | Type | Power Requirement | Regional restriction codes (Region No.) | Remarks |
|---|---|---|---|---|
| XV-DV740 | KUCXJ | AC120V | 1 | |
| XV-DV440 | KCXJ | AC120V | 1 | |

For details, refer to "Important symbols for good services".

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ⓒ**PIONEER CORPORATION 2004**

T-ZZK MAY 2004 printed in Japan

# SAFETY INFORMATION

**This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.**

**Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.**

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

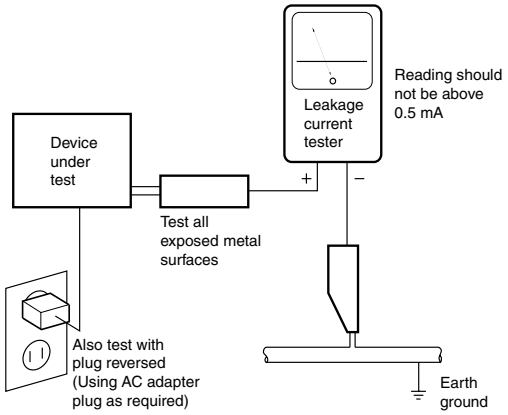
## (FOR USA MODEL ONLY)

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Leakage current tester
Reading should not be above 0.5 mA
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

**[ Important symbols for good services ]**
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

## Disc / content format playback compatibility

This player is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable format—see below for further compatibility information.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- *is a trademark of Fuji Photo Film Co. Ltd.*
- Also compatible with KODAK Picture CD

This player supports the IEC's Super VCD standard for superior picture quality, dual soundtracks, and widescreen support.

Super Video CD (Super VCD)

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# 1. SPECIFICATIONS

**Amplifier section**

Continuous Power Output (RMS):
Front, Center, Surround . . 100 W per channel (1 kHz, 10 % T.H.D., 6Ω)
Subwoofer. . 100 W (100 Hz, 10 % T.H.D., 6Ω)
Continuous Power Output:
Front, Center, Surround . . . 75 W per channel (1 kHz, 1 % T.H.D., 6Ω)
Subwoofer. . . . 75 W (100 Hz, 1 % T.H.D., 6Ω)

**Disc section**

Digital audio characteristics . . . . . DVD fs: 96 kHz, 24-bit
Type . . . . . DVD system, video CD system and compact disc digital audio system
Total harmonic distortion. . . . . 0.004%
Frequency response . . . .4 Hz to 44 kHz (96kHz sampling) / 4 Hz to 22 kHz (48kHz sampling)
Wow and Flutter . . . . . .Limit of measurement (±0.001 % W.PEAK) or less (JEITA)

**FM tuner section**

Frequency range. . . . . 87.5 – 108 MHz
Antenna . . . . . 75Ω, unbalanced

**AM tuner section**

Frequency range
With 9kHz step . . . . . 531 kHz to 1,602 kHz
With 10kHz step. . . . . 530 kHz to 1,700 kHz
Antenna . . . . . Loop antenna

**Miscellaneous**

Power requirements. . . . . AC 120 V, 60 Hz
Power consumption . . . . . 175W
Power consumption in standby. . . . . 0.5 W
Dimensions . . . . . 420 (W) x 70 (H) x 396 (D) mm
$16\frac{9}{16}$ (W) x $2\frac{13}{16}$ (H) x $15\frac{5}{8}$ (D) in.
Weight . . . . . 7.0 kg / 15 lb. 7 oz

**Accessories (DVD/CD receiver)**

Remote control . . . . . 1
AA/R6 dry cell batteries. . . . . 2
Video cable (yellow plugs). . . . . 1
AM loop antenna . . . . . 1
FM antenna . . . . . 1
Power cord. . . . . 1
Setup Guide . . . . . 1
Operating instructions . . . . . 1
Warranty Card . . . . . 1

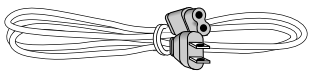
**Note**

- Specifications and design subject to possible modification without notice, due to improvements.

Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc.

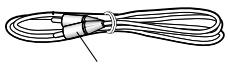
## ● Accessories

- Power cord (ADG7021)



- FM Antenna (ADH7030)

- Video Cord (L = 1.5m)(XDE3046)




- Remote Control Unit (XXD3076)

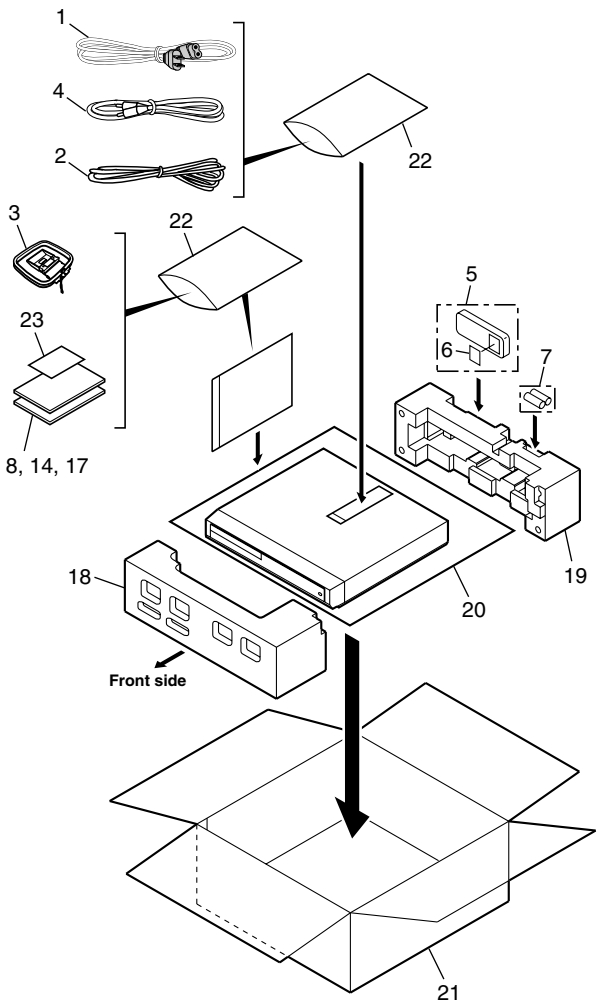
- AM Loop Antenna (ATB7013)

- Dry Cell Battery (R6P, AA)

# 2. EXPLODED VIEWS AND PARTS LIST

*NOTES:*
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

## 2.1 PACKING



## PACKING SECTION Parts List

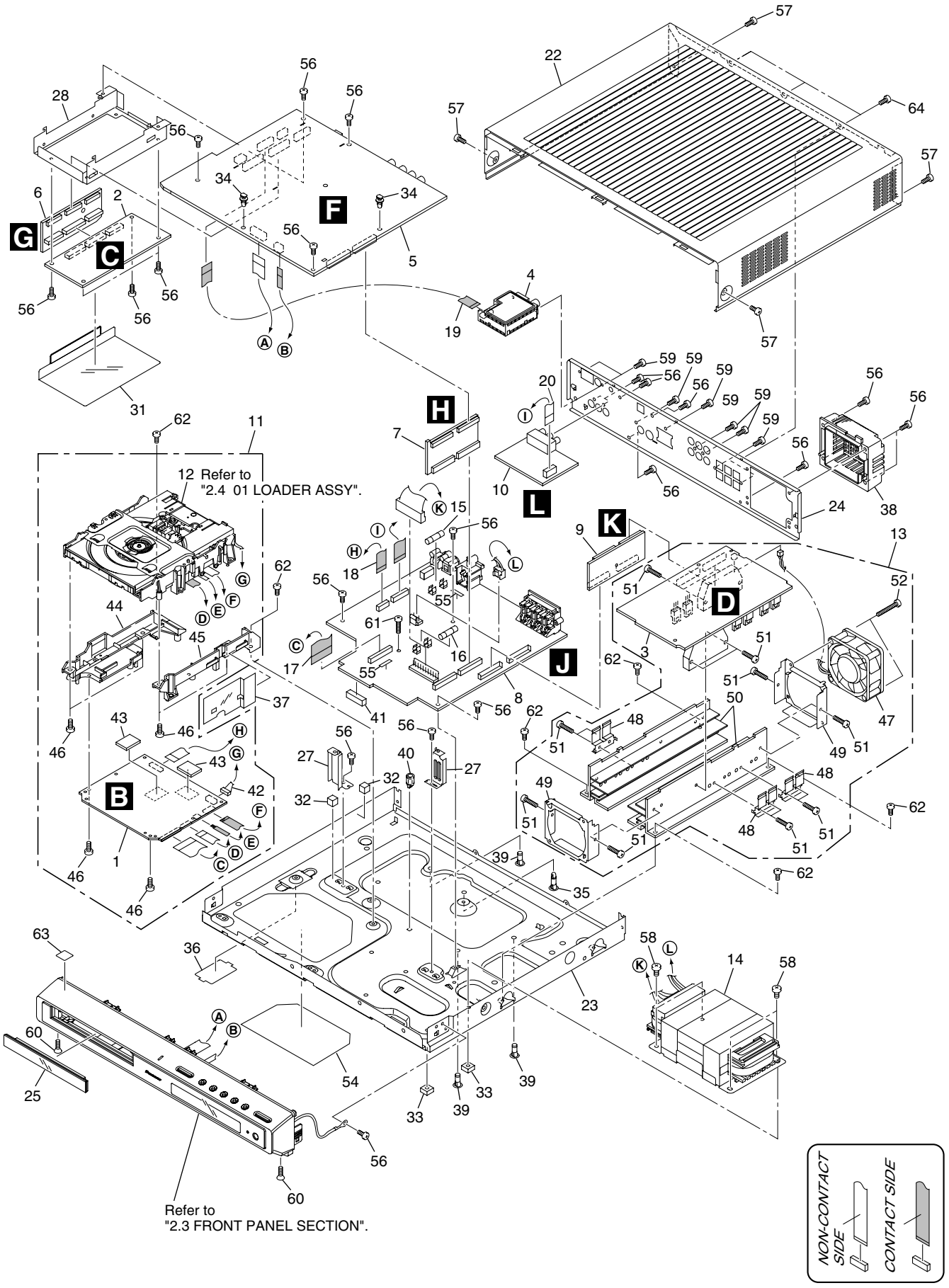
| Mark | No. | Description | Part No. |
|---|---|---|---|
| ⚠ | 1 | Power Cord | ADG7021 |
| | 2 | FM Wire Antenna | ADH7030 |
| | 3 | AM Loop Antenna | ATB7013 |
| | 4 | Video Cord | XDE3046 |
| | 5 | Remote Control | XXD3076 |
| | 6 | Battery Cover | XZN3130 |
| NSP | 7 | Dry Cell Batteries (R6P/AA) | VEM1031 |
| | 8 | Operating Instructions (English) | XRB3037 |
| | 9 | •••••• | |
| | 10 | •••••• | |
| | 11 | •••••• | |
| | 12 | •••••• | |
| | 13 | •••••• | |
| | 14 | Operating Instructions (French) | XRC3147 |
| | 15 | •••••• | |
| | 16 | •••••• | |
| | 17 | Operating Instructions (English/French) | See Contrast table (2) |
| | 18 | Front Pad | XHA3145 |
| | 19 | Rear Pad | XHA3146 |
| | 20 | Packing Sheet | AHG7010 |
| | 21 | Packing Case | See Contrast table (2) |
| NSP | 22 | Polyethylene Bag | Z21-038 |
| NSP | 23 | Warranty Card | ARY7045 |

### (2) CONTRAST TABLE

XV-DV740/KUCXJ and XV-DV440/KCXJ are constructed the same except for the following :

| Mark | No. | Description | XV-DV740/KUCXJ | XV-DV440/KCXJ |
|---|---|---|---|---|
| | 17 | Operating Instructions (English/French) | XRE3084 | XRE3081 |
| | 21 | Packing Case | XHD3433 | XHD3453 |

# 2.2 EXTERIOR SECTION



## EXTERIOR SECTION Parts List

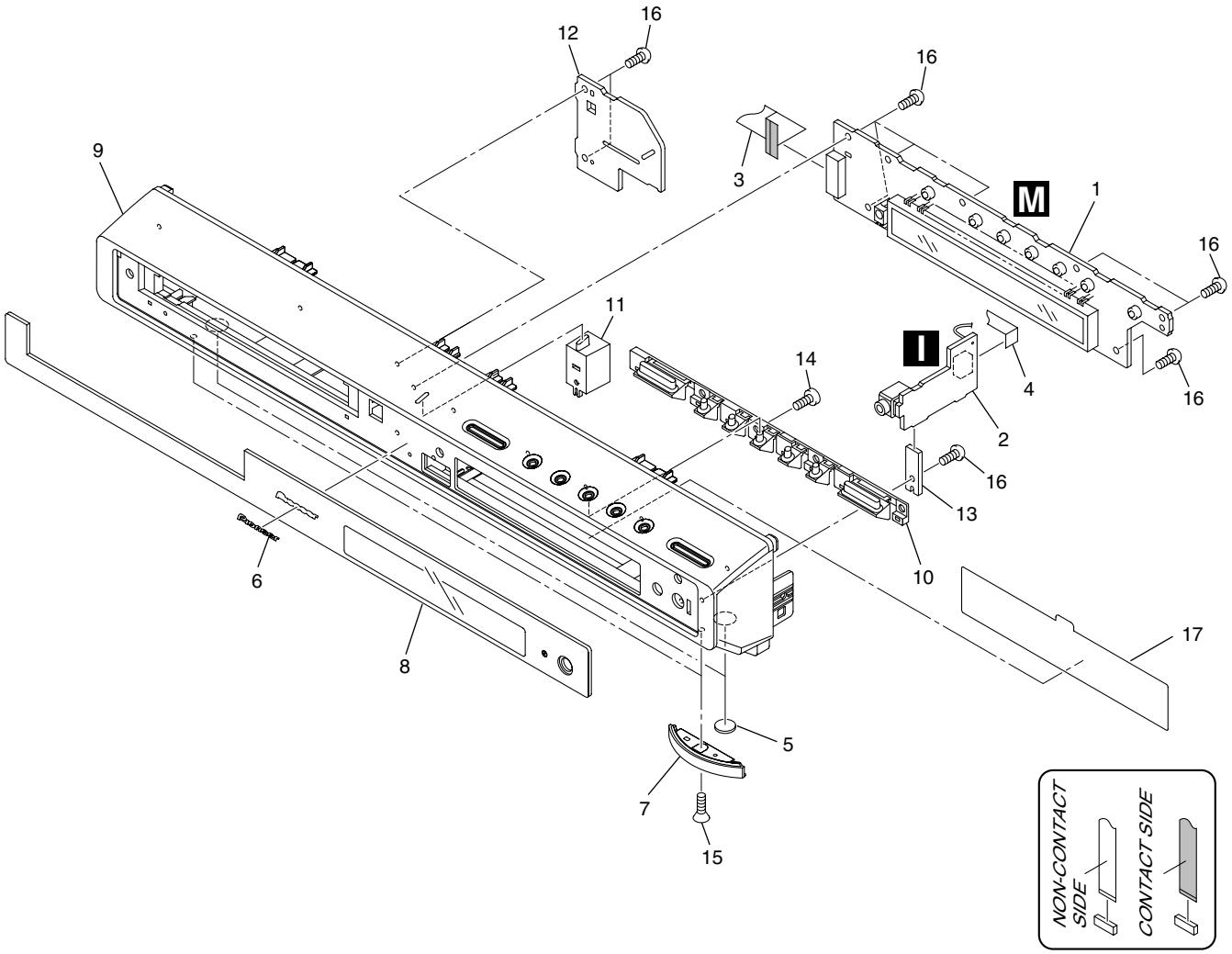
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | DVDM Assy | AWM7878 |
| | 2 | DSP Assy | AWX8526 |
| | 3 | 6CH AMP | AZW7283 |
| | 4 | FM/AM TUNER Unit | AXX7172 |
| | 5 | CONTROL Assy | See Contrast table (2) |
| | 6 | TRADE3 Assy | XWZ3868 |
| | 7 | TRADE2 Assy | XWX3071 |
| | 8 | POWER Assy | XWZ3885 |
| | 9 | TRADE1 Assy | XWZ3877 |
| | 10 | VIDEO Assy | XWZ3875 |
| NSP | 11 | DVD Assy | AXA7131 |
| NSP | 12 | 01 LOADER Assy | VWT1213 |
| NSP | 13 | AMP Module 6ch | AXQ7254 |
| ⚠ | 14 | Power Transformer (T1) | XTS3075 |
| ⚠ | 15 | Fuse (FU1 : 6.3A) | REK1069 |
| ⚠ | 16 | Fuse (FU2 : 6.3A) | REK1069 |
| | 17 | 30P F.F.C/60V | XDD3128 |
| | 18 | 18P F.F.C/60V | XDD3129 |
| | 19 | 11P F.F.C/60V | XDD3152 |
| | 20 | 5P F.F.C/60V | XDD3136 |
| | 21 | ••••• | |
| | 22 | Bonnet Case | XZN3153 |
| NSP | 23 | Chassis | XNA3017 |
| | 24 | Rear Panel | See Contrast table (2) |
| | 25 | Tray Cap Assy | XXG3179 |
| | 26 | ••••• | |
| | 27 | Control Angle | XNG3108 |
| | 28 | DSP Holder | XNG3109 |
| | 29 | ••••• | |
| | 30 | ••••• | |
| | 31 | DSP Barrier | XEC3056 |
| | 32 | PCB Spacer | AEB7206 |
| | 33 | S Cover | AEB7262 |
| NSP | 34 | PCB Spacer (3x6) | AEC7156 |
| | 35 | Locking Card Spacer | AEC7372 |
| | 36 | Bottom Plate | AEC7420 |
| | 37 | Barrier S | AEC7429 |
| | 38 | Fan Cover | XMR3086 |
| | 39 | Card Spacer | DNK2769 |
| NSP | 40 | Spacer | PNY-404 |
| | 41 | Cushion Rubber | XEB3036 |
| | 42 | Connector Assy | PG05KK-E25 |
| | 43 | Cushion | AEB7267 |
| | 44 | Adapter02 L | ANW7280 |
| | 45 | Adapter02 R | ANW7281 |
| | 46 | Screw | BPZ30P080FTC |
| | 47 | DC Fan Motor | AXM7025 |
| | 48 | FET Bracket A | ANG7418 |
| | 49 | Fan Plate | ANG7462 |
| NSP | 50 | Heat Sink | ANH7166 |
| | 51 | Screw | BBZ30P140FTC |
| | 52 | Screw | BBZ30P300FTC |
| | 53 | ••••• | |
| | 54 | Name Label | See Contrast table (2) |
| NSP | 55 | Fuse Card | AAX2374 |
| | 56 | Screw | BBZ30P060FTC |
| | 57 | Screw | BBZ30P080FNI |
| | 58 | Screw | BBZ40P060FTC |
| | 59 | Screw | VPZ30P100FTC |
| | 60 | Screw | CBZ30P080FTC |
| | 61 | Screw | VPZ30P140FTC |
| | 62 | Screw | VBZ30P080FTC |
| NSP | 63 | Energy Star Label | AAX8022 |
| | 64 | Screw | BBZ30P040FTC |

### (2) CONTRAST TABLE

XV-DV740/KUCXJ and XV-DV440/KCXJ are constructed the same except for the following :

| Mark | No. | Description | XV-DV740/KUCXJ | XV-DV440/KCXJ |
|---|---|---|---|---|
| | 5 | CONTROL Assy | XWZ3882 | XWZ3896 |
| | 24 | Rear Panel | XNC3298 | XNC3320 |
| | 54 | Name Label | XAX3456 | XAX3479 |

# 2.3 FRONT PANEL SECTION



## FRONT PANEL SECTION Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | DISPLAY Assy | XWZ3874 |
| | 2 | HP Assy | XWZ3869 |
| | 3 | 15P F.F.C/60V | XDD3155 |
| | 4 | 5P F.F.C/60V | XDD3131 |
| | 5 | Leg | AEB7090 |
| | 6 | Pioneer Name Plate | VAM1136 |
| | 7 | Foot | XMR3088 |
| | 8 | Display Window | XAK3450 |
| | 9 | Front Panel | See Contrast table (2) |
| | 10 | FUNC. Button | XAD3185 |
| | 11 | Top Lens | XAK3453 |
| | 12 | Support PCB | ••••• |
| | 13 | Support PCB | ••••• |
| | 14 | Screw | BPZ30P080FTC |
| | 15 | Screw | CBZ30P080FTC |
| | 16 | Screw | VPZ30P100FTC |
| | 17 | F.L Barrier | XEC3055 |

### (2) CONTRAST TABLE

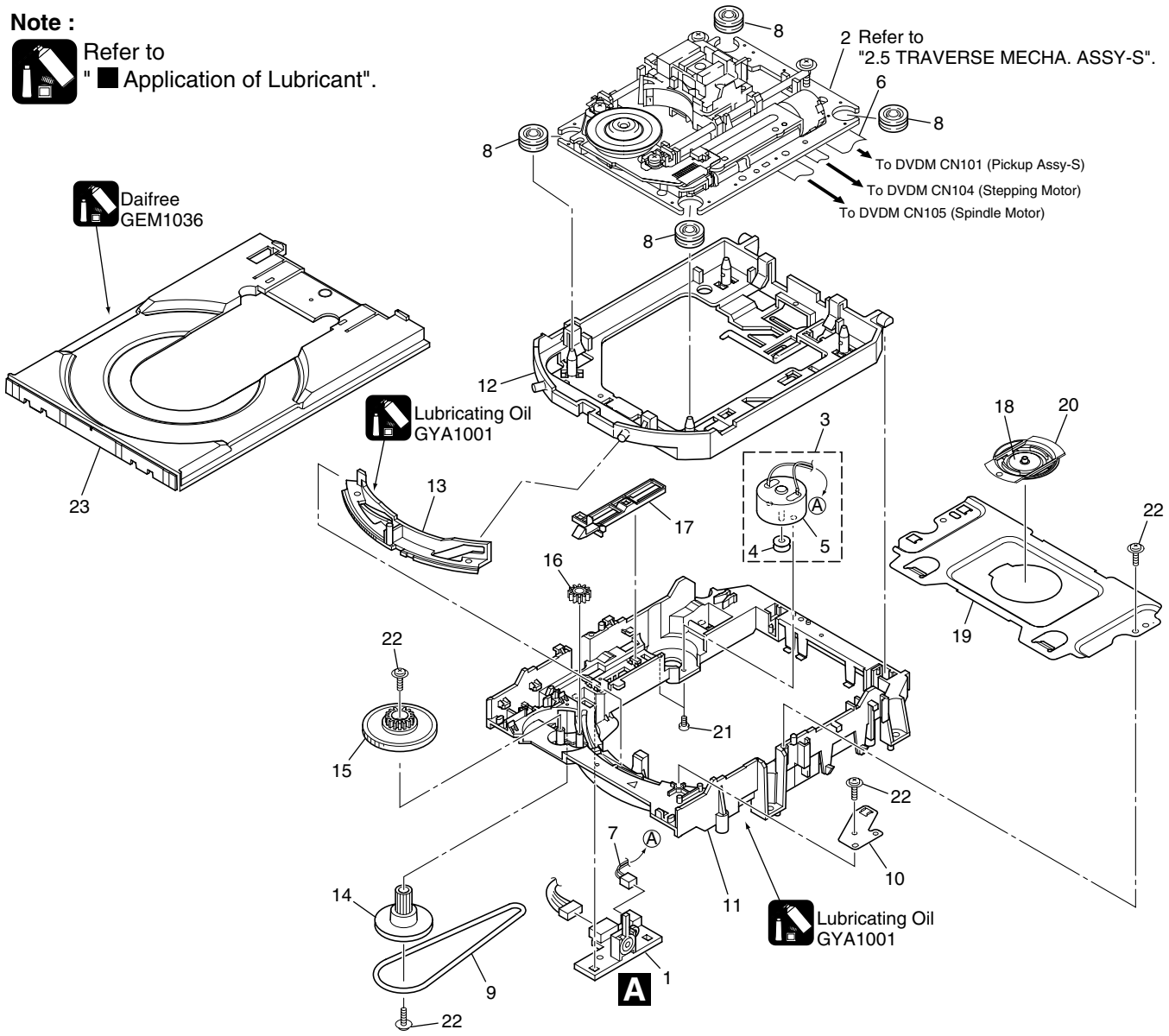
XV-DV740/KUCXJ and XV-DV440/KCXJ are constructed the same except for the following :

| Mark | No. | Description | XV-DV740/KUCXJ | XV-DV440/KCXJ |
|---|---|---|---|---|
| | 9 | Front Panel | XMB3155 | XMB3170 |

# 2.4 01 LOADER ASSY

**Note :**

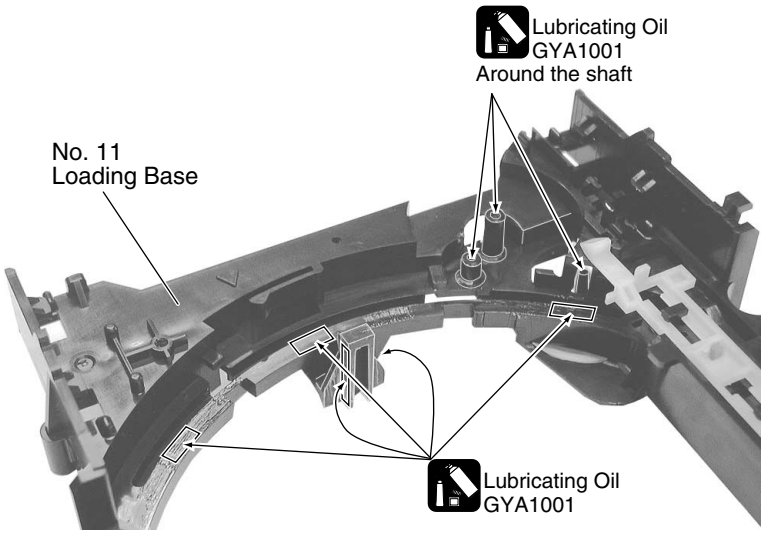
Refer to
" ■ Application of Lubricant".

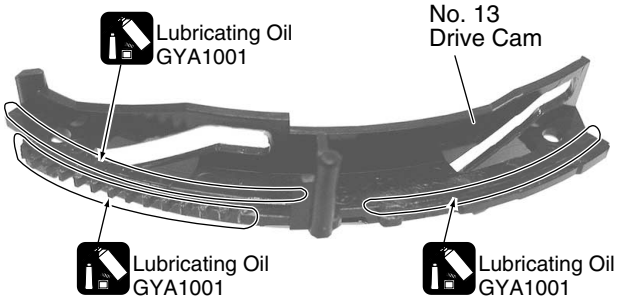



## 01 LOADER ASSY Parts List

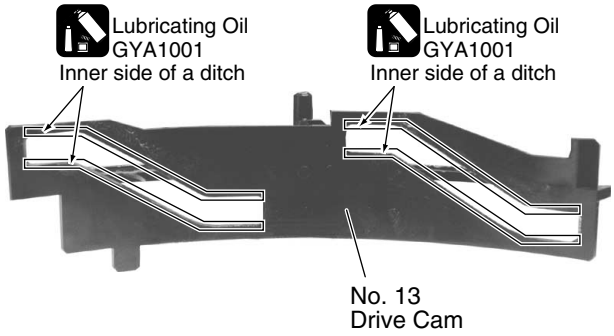
| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 1 | LOAB Assy | VWG2346 |
| | 2 | Traverse Mechanism Assy-S | VXX2909 |
| | 3 | Loading Motor Assy | VXX2912 |
| | 4 | Motor Pulley | PNW1634 |
| NSP | 5 | Motor | VXM1107 |
| | 6 | Flexible Cable (24P) | VDA1947 |
| | 7 | Connector Assy 2P | VKP2253 |
| | 8 | Floating Rubber | VEB1351 |
| | 9 | Belt | VEB1330 |
| | 10 | Stabilizer | VNE2253 |
| | 11 | Loading Base | VNL1917 |
| | 12 | Float Base DVD | VNL1918 |
| | 13 | Drive Cam | VNL1919 |
| | 14 | Gear Pulley | VNL1921 |
| | 15 | Loading Gear | VNL1922 |
| | 16 | Drive Gear | VNL1923 |
| | 17 | SW Lever | VNL1925 |
| | 18 | Clamper Plate | VNE2251 |
| | 19 | Bridge | VNE2252 |
| | 20 | Clamper | VNL1924 |
| | 21 | Screw | JGZ17P028FTC |
| | 22 | Screw | VBA1094 |
| | 23 | Tray | VNL1920 |

## Application of Lubricant

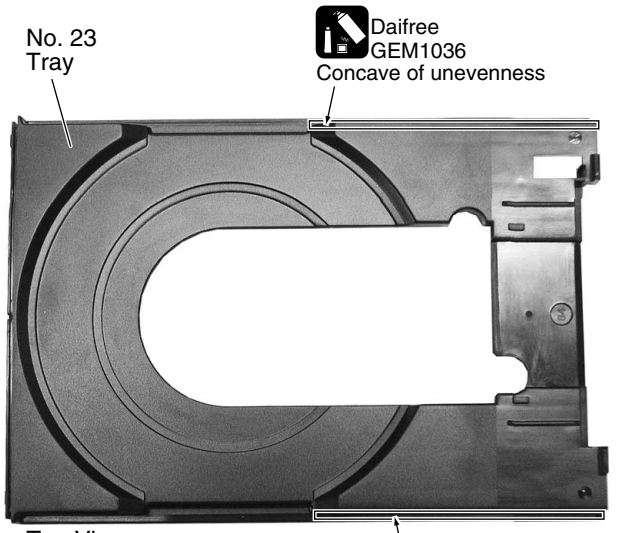


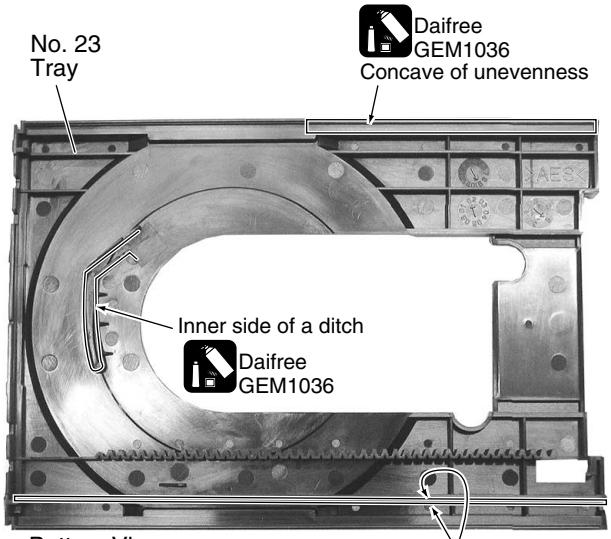

● Front View




● Rear View

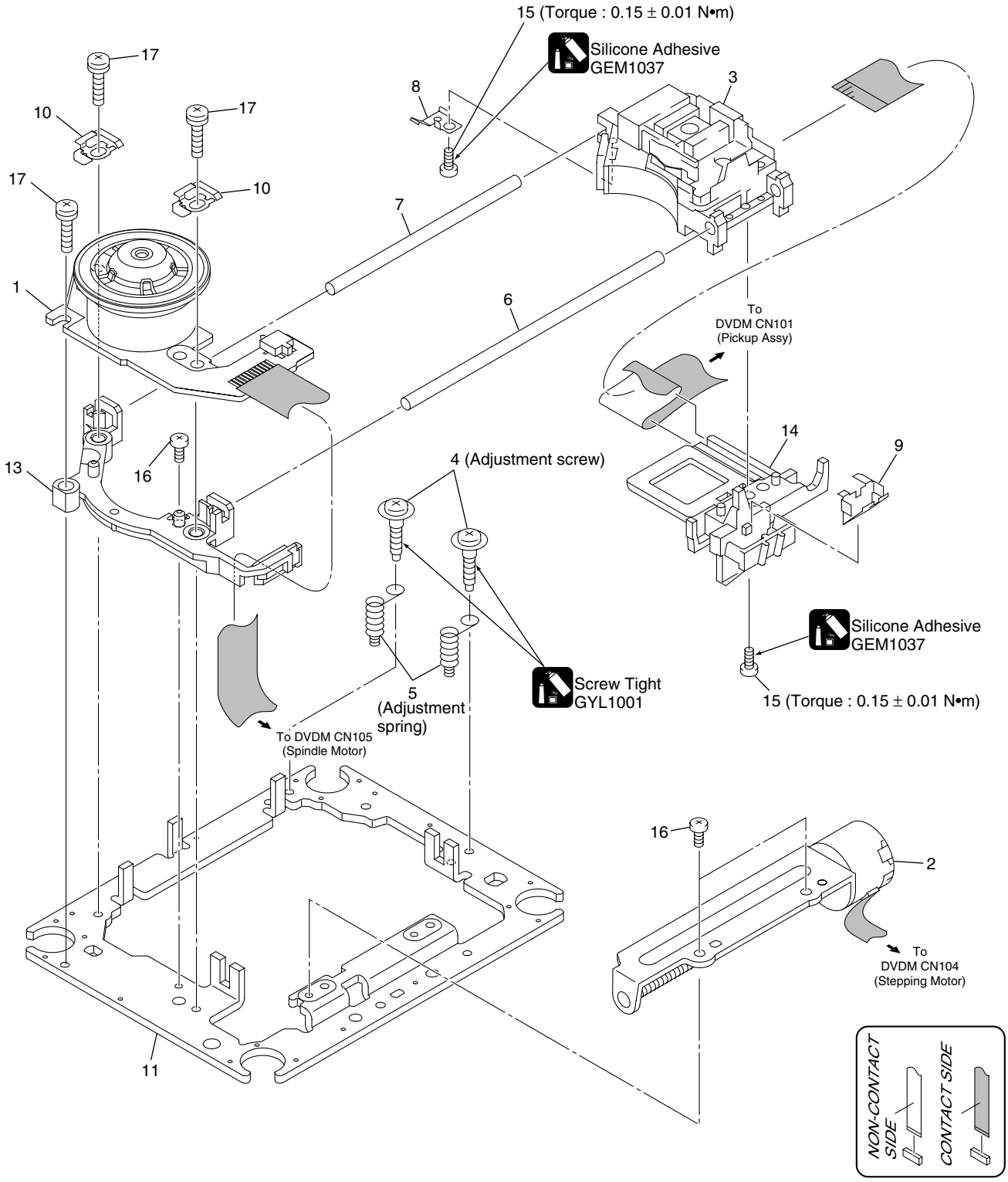



● Top View




● Bottom View

# 2.5 TRAVERSE MECHA ASSY-S

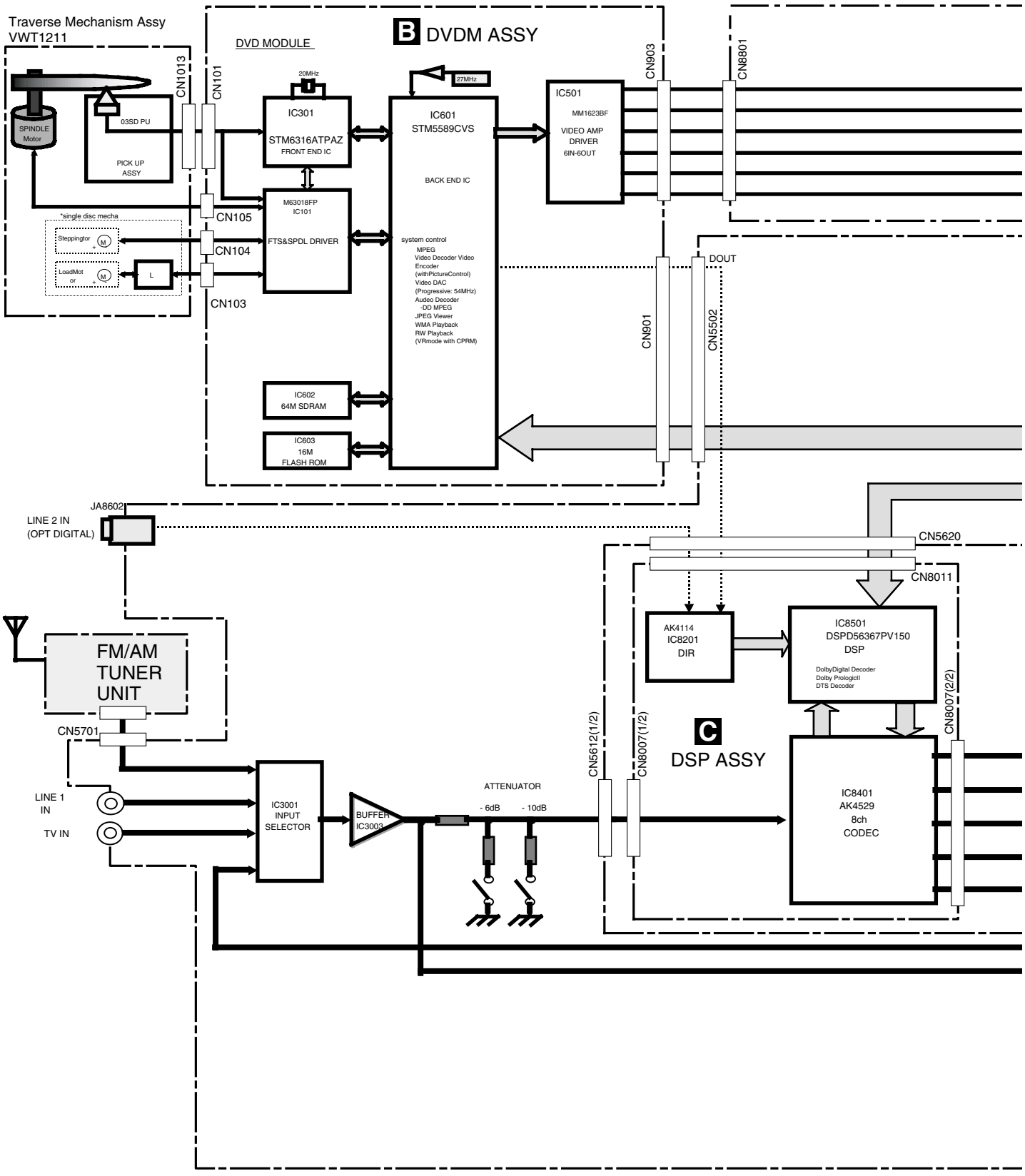


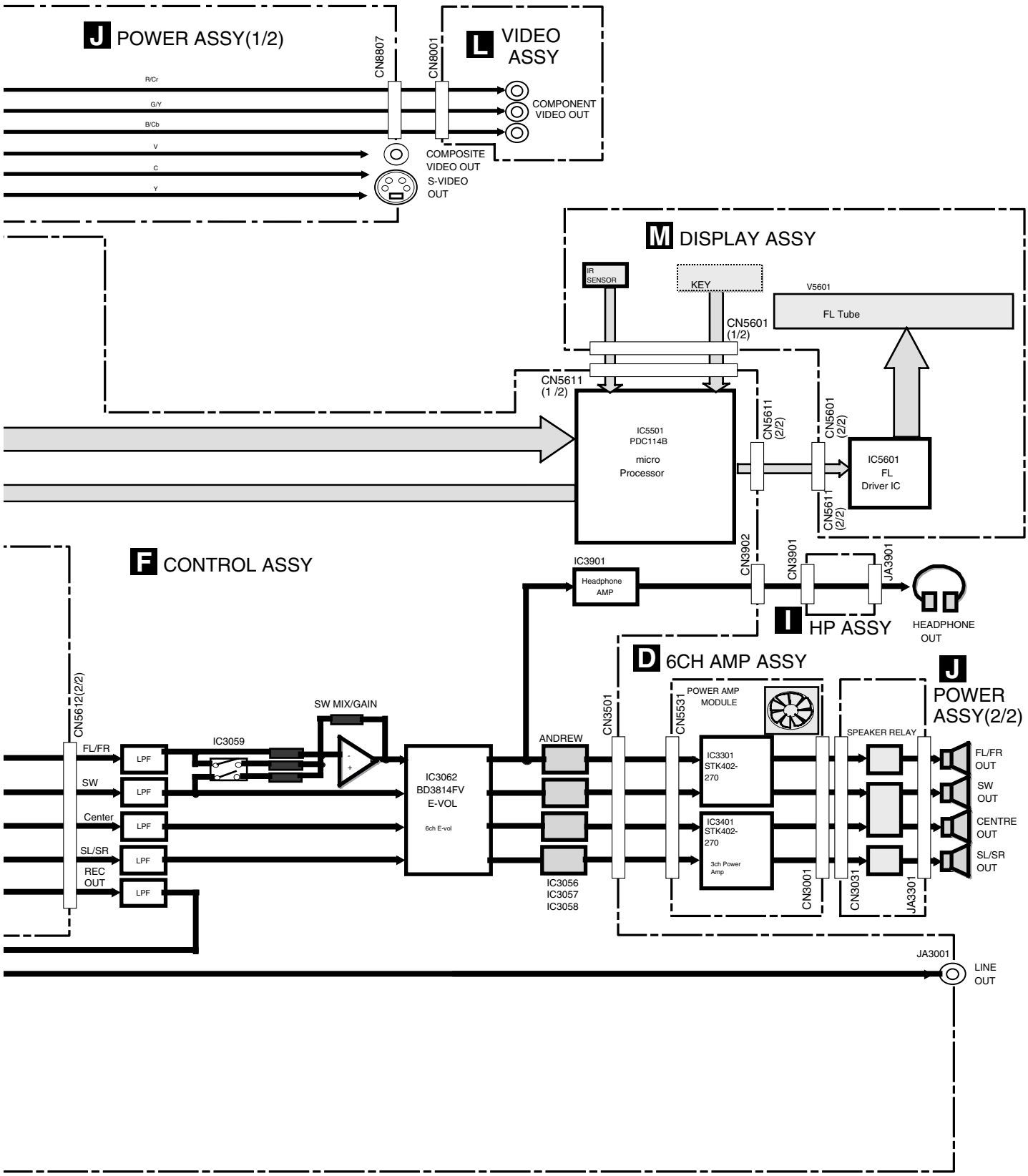
## TRAVERSE MECHA ASSY-S Parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Spindle Motor | VXM1099 |
| | 2 | Stepping Motor | VXM1101 |
| ⚠ | 3 | Pickup Assy-S | OXX8005 |
| | 4 | Skew Screw | VBA1080 |
| | 5 | Skew Spring | VBH1335 |
| | 6 | Guide Bar | VLL1514 |
| | 7 | Sub Guide Bar | VLL1515 |
| | 8 | Leaf Spring | VNC1023 |
| | 9 | Joint Spring | VNC1019 |
| | 10 | Support Spring | VNC1020 |
| NSP | 11 | Mechanism Chassis | VNE2248 |
| | 12 | •••••• | |
| | 13 | Spacer | VNL1913 |
| | 14 | Joint 03 | VNL1949 |
| | 15 | Tapping Screw | VBA1092 |
| | 16 | Screw | BBZ20P050FTC |
| | 17 | Screw | PMA26P100FTC |

# 3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

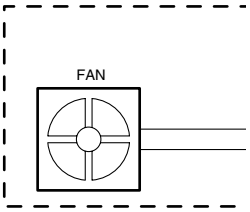
## 3.1 BLOCK DIAGRAM

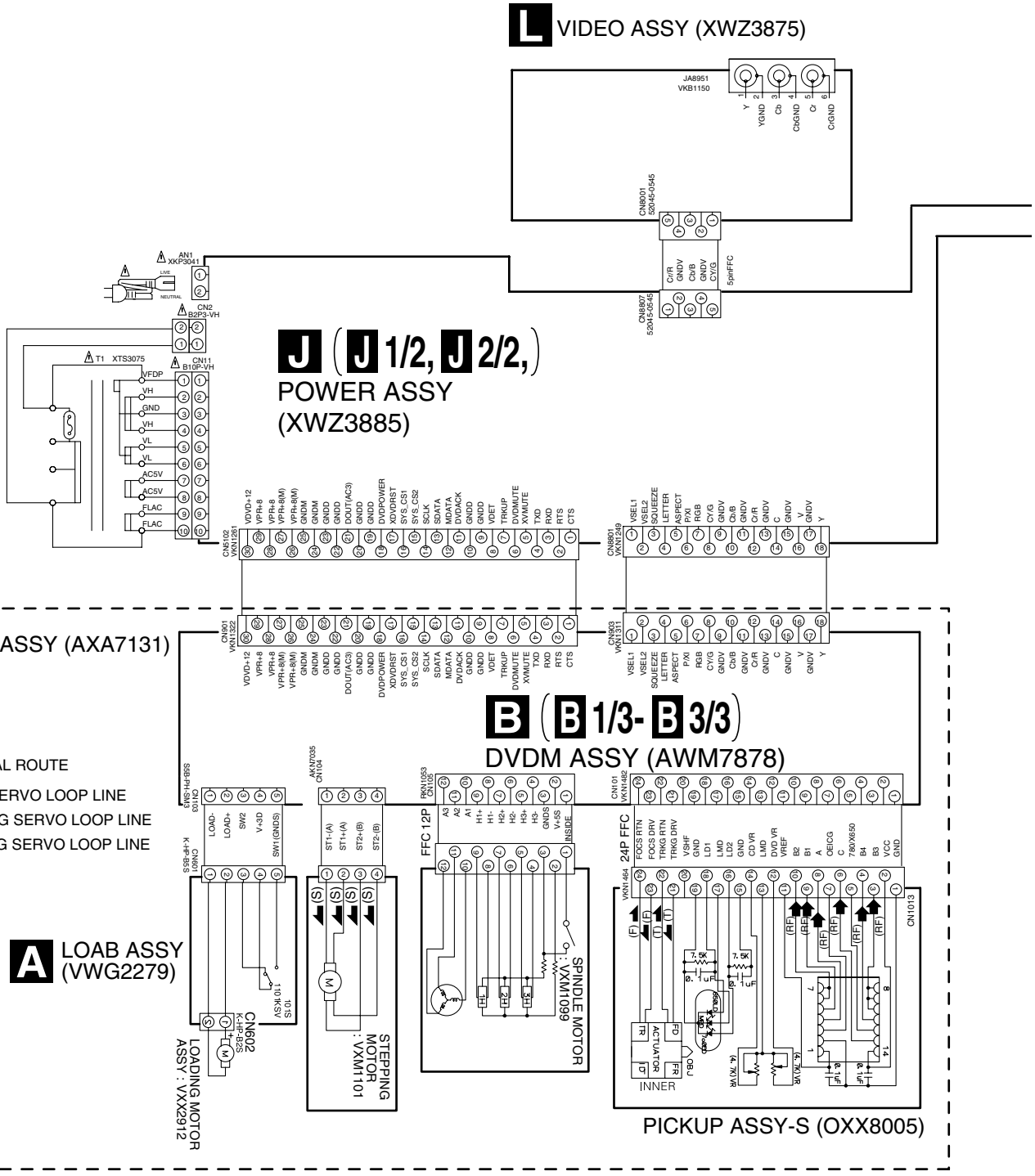


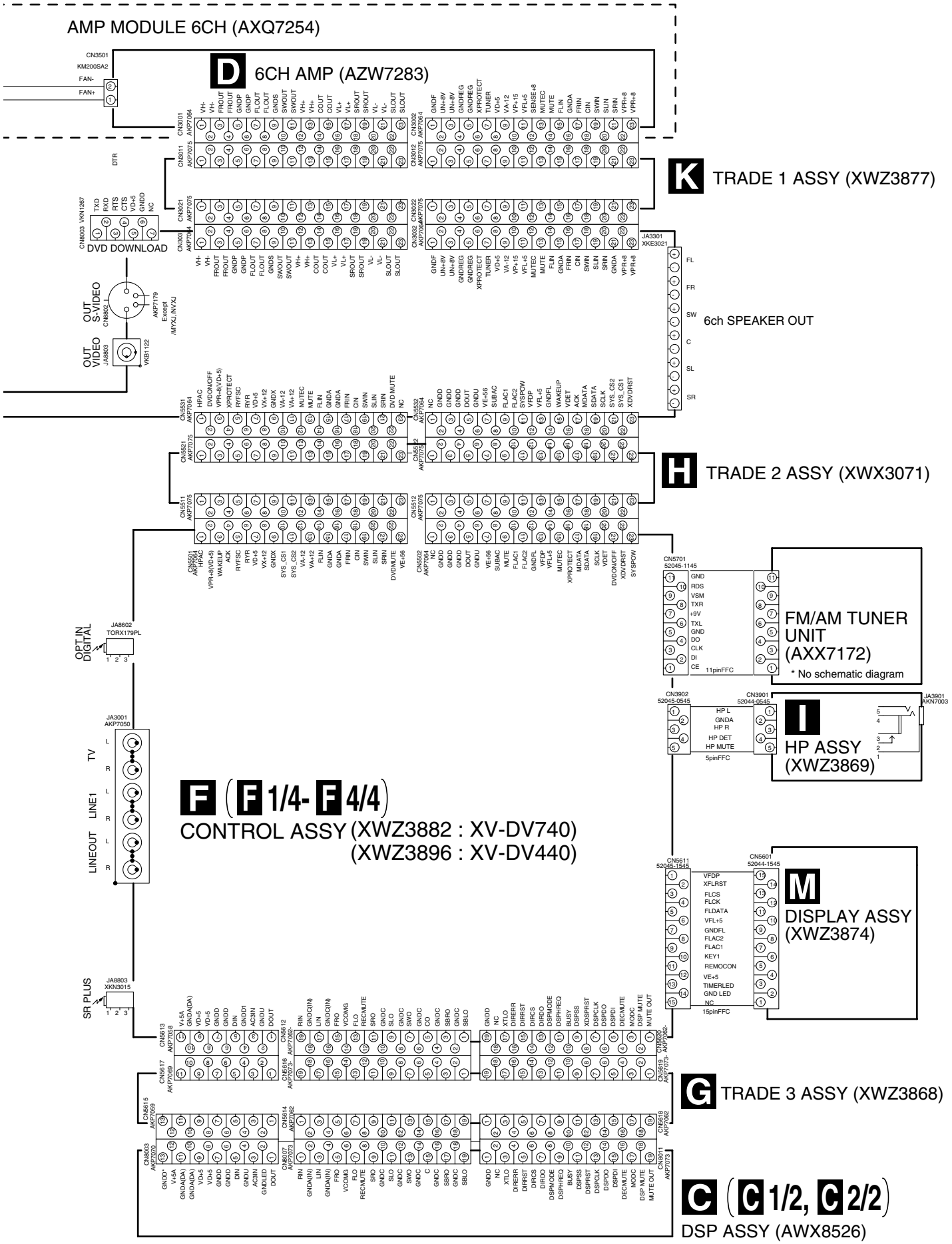

J POWER ASSY(1/2)
CN8807
CN8001
L VIDEO ASSY
R/Cr
G/Y
B/Cb
V
C
Y
COMPONENT VIDEO OUT
COMPOSITE VIDEO OUT
S-VIDEO OUT
M DISPLAY ASSY
IR SENSOR
KEY
V5601
FL Tube
CN5601 (1/2)
CN5611 (1 /2)
IC5501 PDC114B micro Processor
CN5611 (2/2)
CN5601 (2/2)
IC5601 FL Driver IC
CN5611 (2/2)
F CONTROL ASSY
IC3901 Headphone AMP
CN3902
CN3901
JA3901
I HP ASSY
HEADPHONE OUT
D 6CH AMP ASSY
J POWER ASSY(2/2)
CN5612(2/2)
SW MIX/GAIN
IC3059
FL/FR
SW
Center
SL/SR
REC OUT
LPF
IC3062 BD3814FV E-VOL
6ch E-vol
ANDREW
CN3501
POWER AMP MODULE
CN5531
IC3301 STK402-270
IC3401 STK402-270
3ch Power Amp
SPEAKER RELAY
CN3001
CN3031
JA3301
IC3056 IC3057 IC3058
FL/FR OUT
SW OUT
CENTRE OUT
SL/SR OUT
JA3001
LINE OUT

# 3.2 LOAB ASSY and OVERALL WIRING DIAGRAM

*NOTES:* • *When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".*
• *The > mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
• *: The power supply is shown with the marked box.*

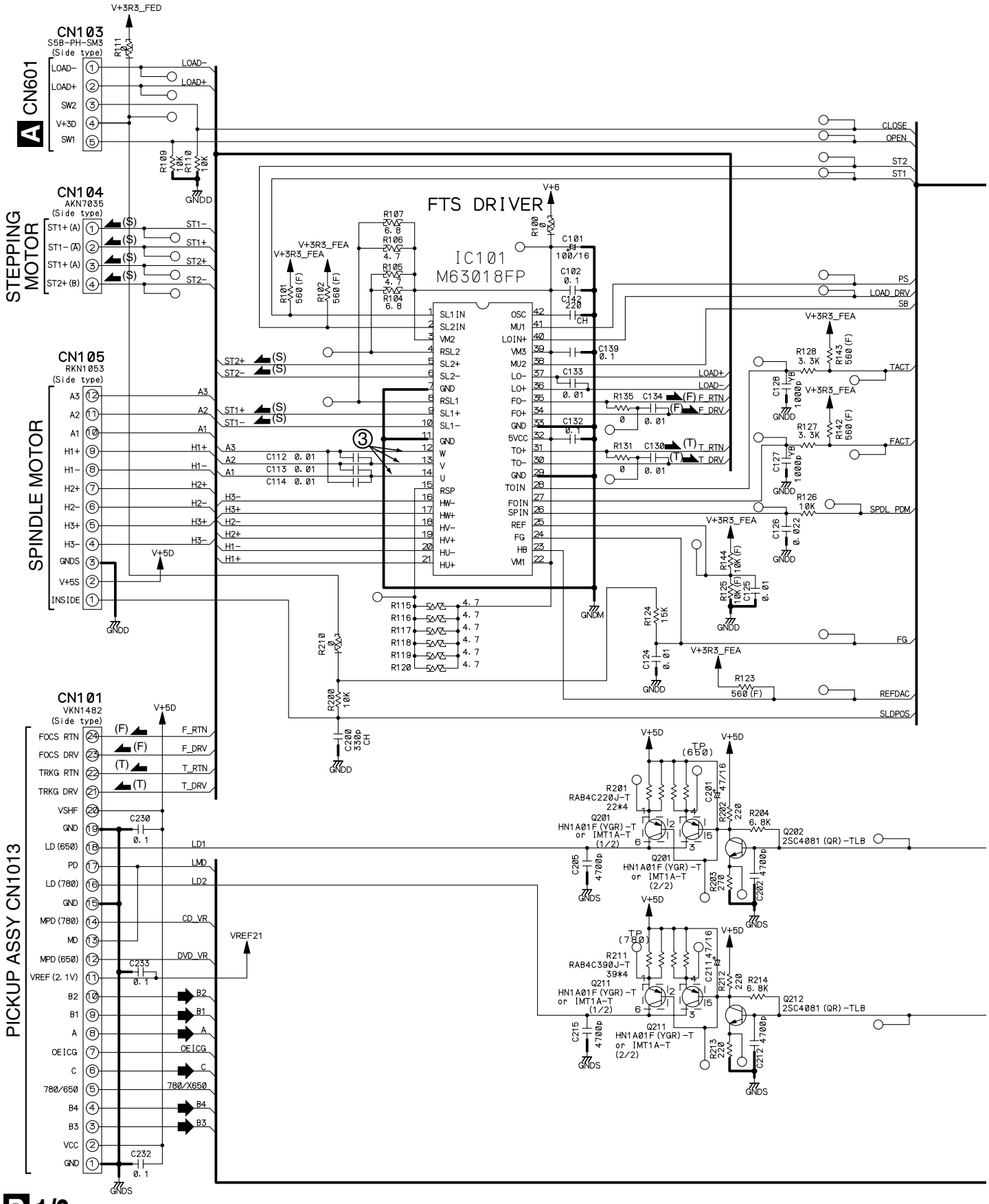



AMP MODULE 6CH (AXQ7254)
D 6CH AMP (AZW7283)
K TRADE 1 ASSY (XWZ3877)
H TRADE 2 ASSY (XWX3071)
F (F 1/4- F 4/4)
CONTROL ASSY (XWZ3882 : XV-DV740)
(XWZ3896 : XV-DV440)
G TRADE 3 ASSY (XWZ3868)
C (C 1/2, C 2/2)
DSP ASSY (AWX8526)
I HP ASSY (XWZ3869)
M DISPLAY ASSY (XWZ3874)
FM/AM TUNER UNIT (AXX7172)
* No schematic diagram
6ch SPEAKER OUT
DVD DOWNLOAD
OUT S-VIDEO
OUT VIDEO
OPT IN DIGITAL
SR PLUS
LINEOUT LINE1 TV

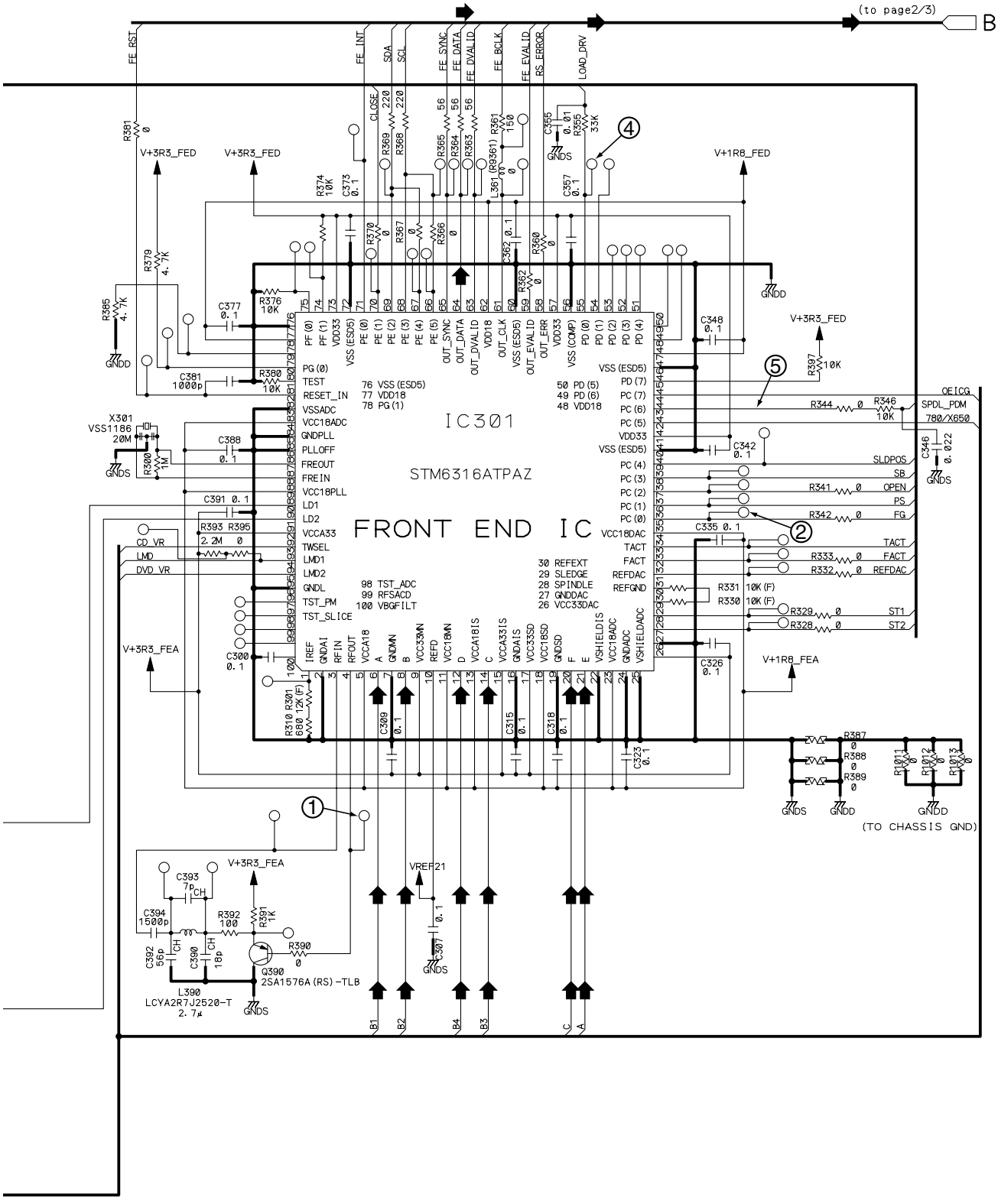
# 3.3 DVDM ASSY(1/3)

## B 1/3 DVDM ASSY (AWM7878)

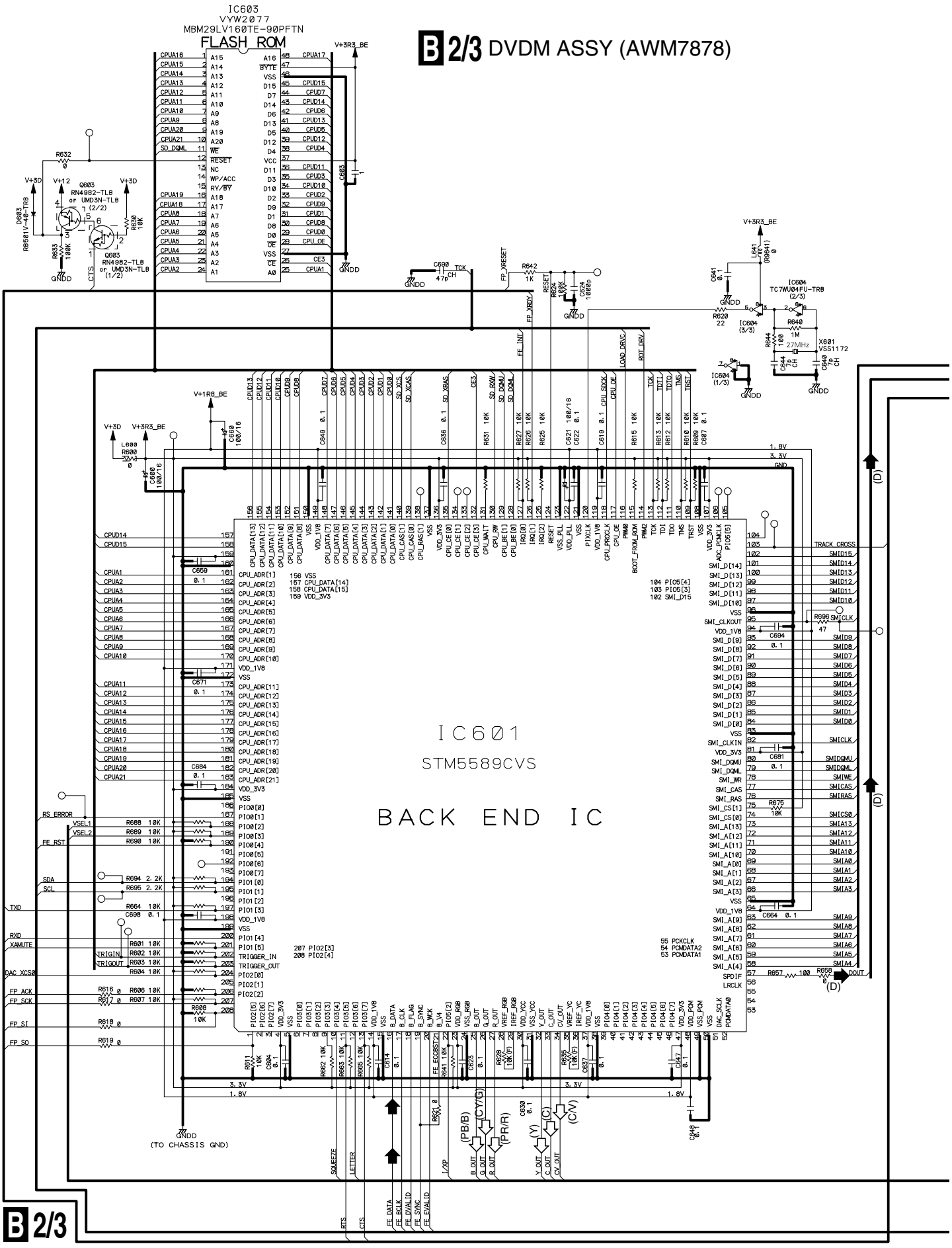



## B 1/3

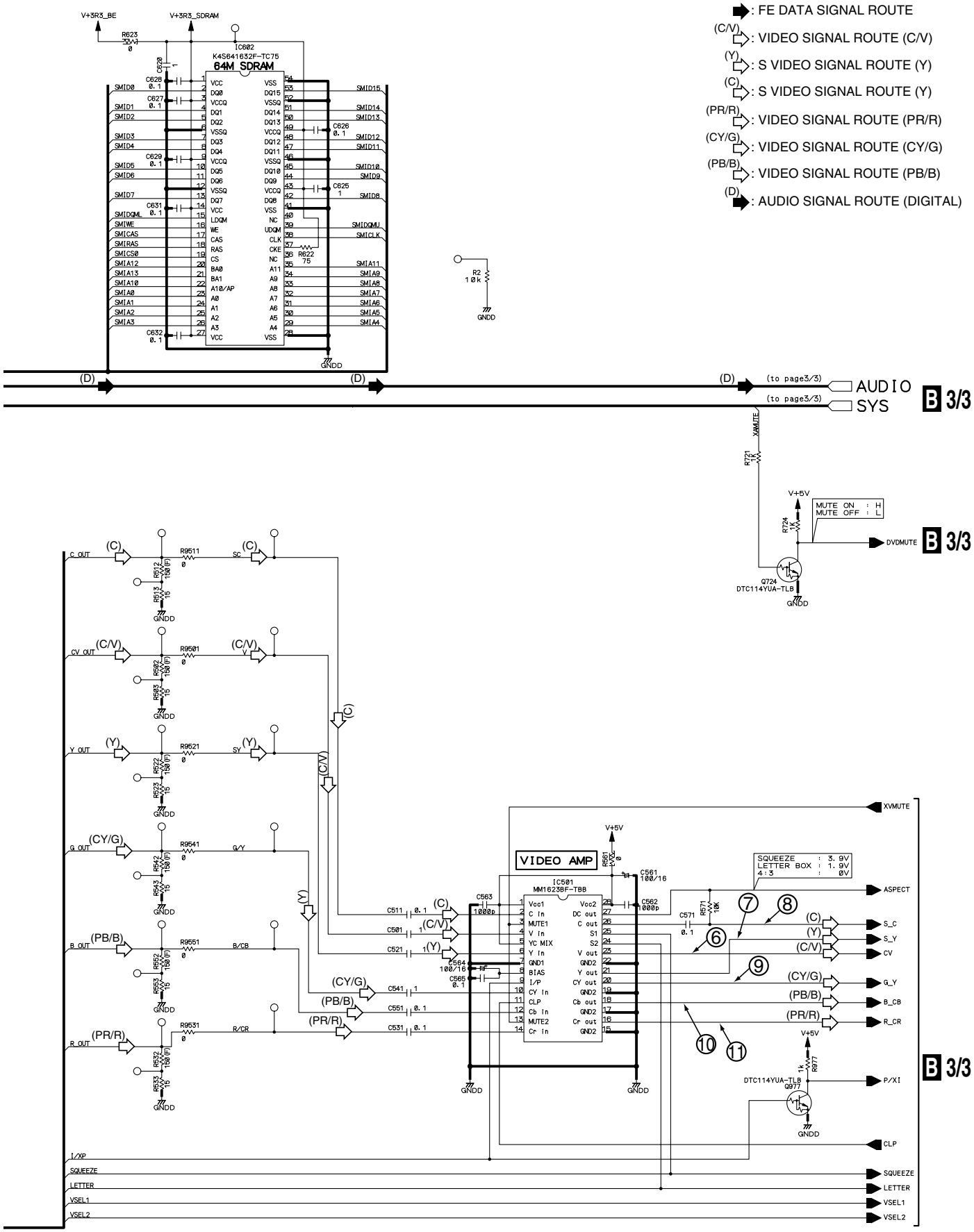
: FE DATA SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE
(S): STEPPING SERVO LOOP LINE



# 3.4 DVDM ASSY(2/3)

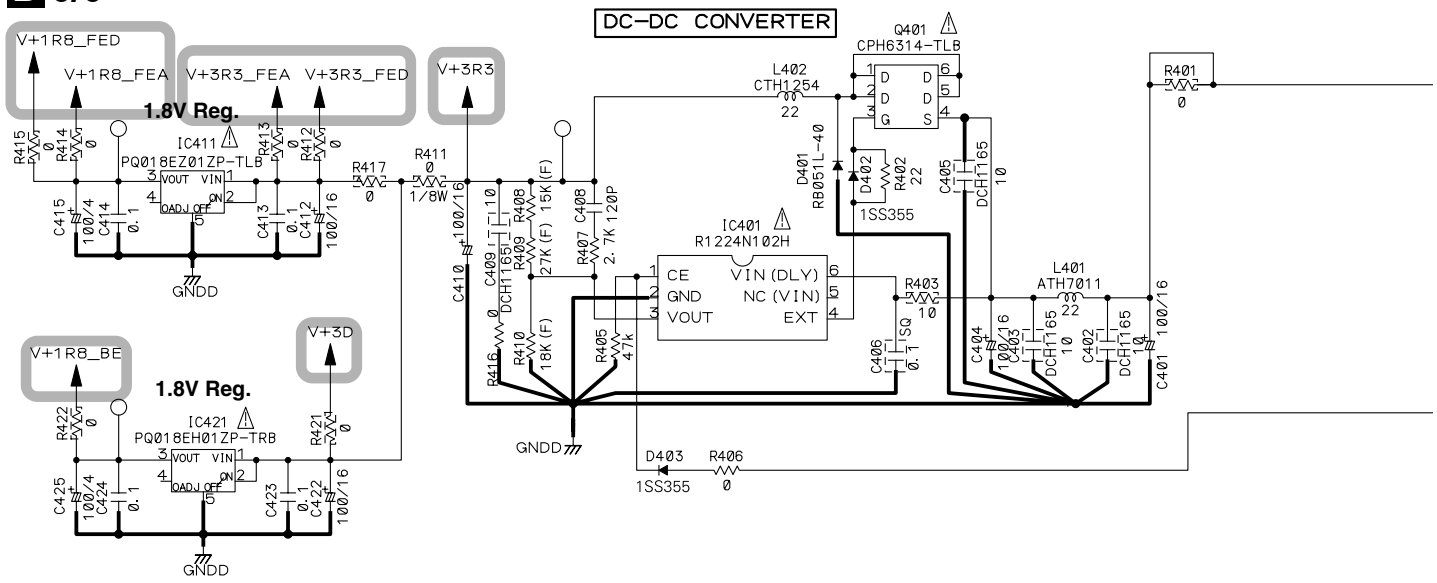


: FE DATA SIGNAL ROUTE
(C/V): VIDEO SIGNAL ROUTE (C/V)
(Y): S VIDEO SIGNAL ROUTE (Y)
(C): S VIDEO SIGNAL ROUTE (Y)
(PR/R): VIDEO SIGNAL ROUTE (PR/R)
(CY/G): VIDEO SIGNAL ROUTE (CY/G)
(PB/B): VIDEO SIGNAL ROUTE (PB/B)
(D): AUDIO SIGNAL ROUTE (DIGITAL)

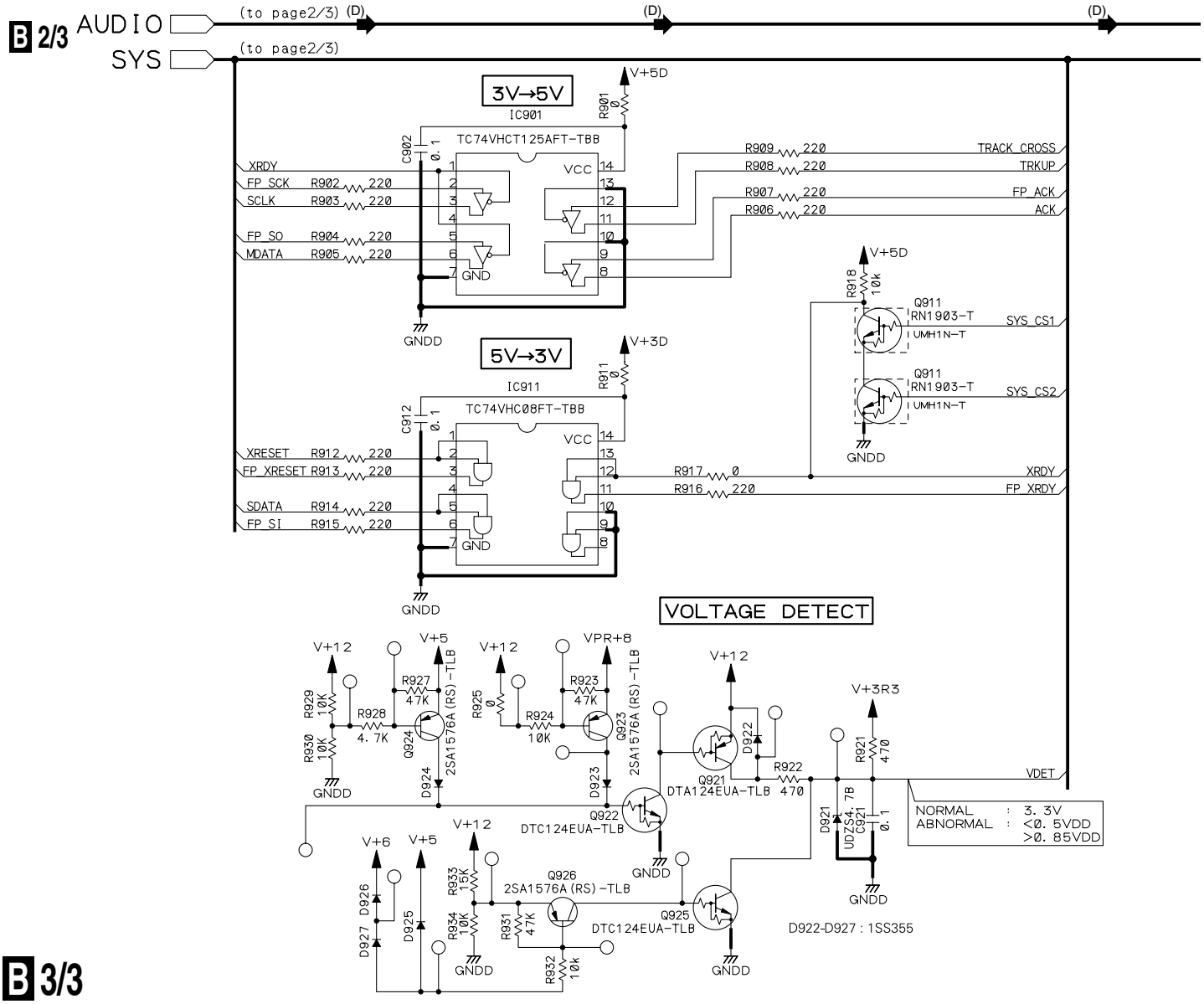


# 3.5 DVDM ASSY(3/3)

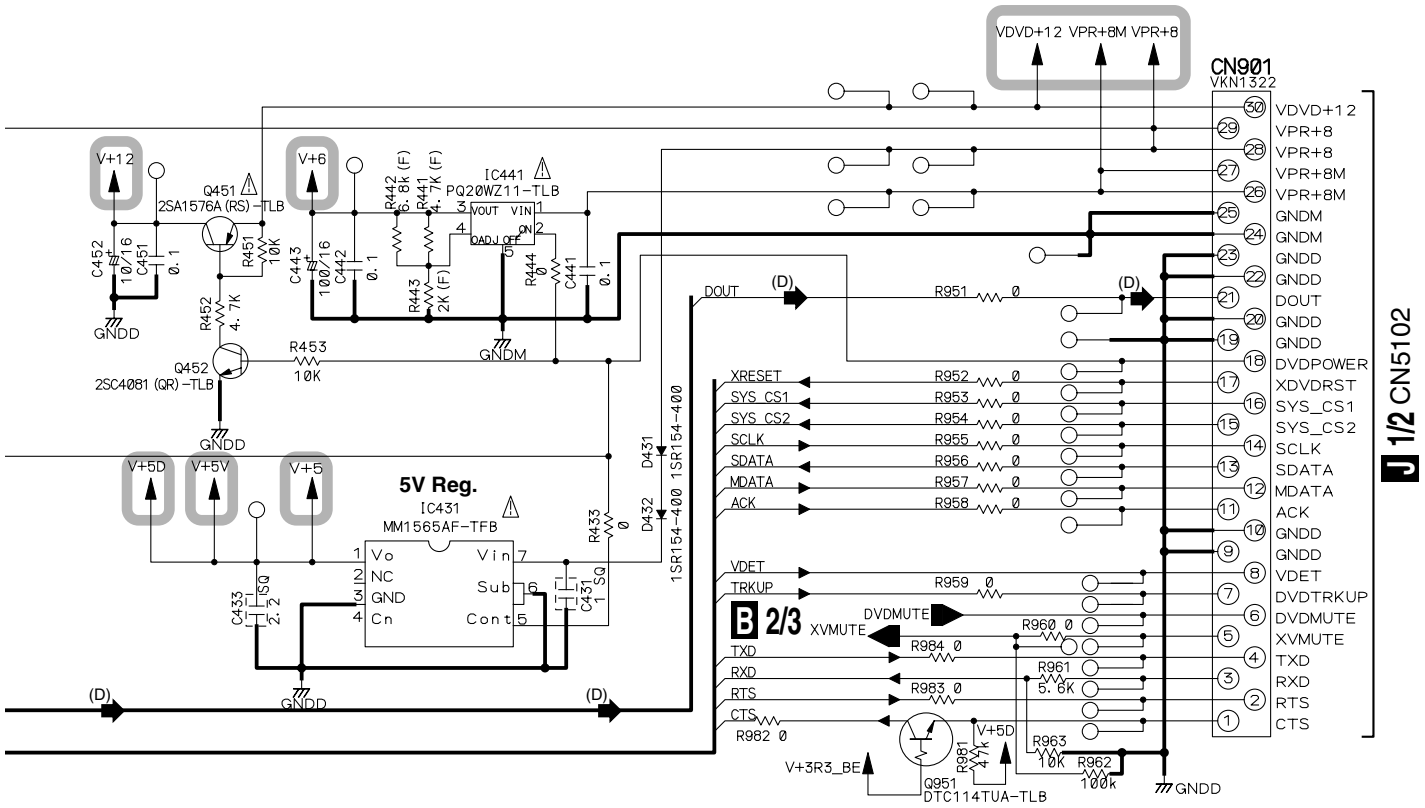
## B 3/3 DVDM ASSY (AWM7878)

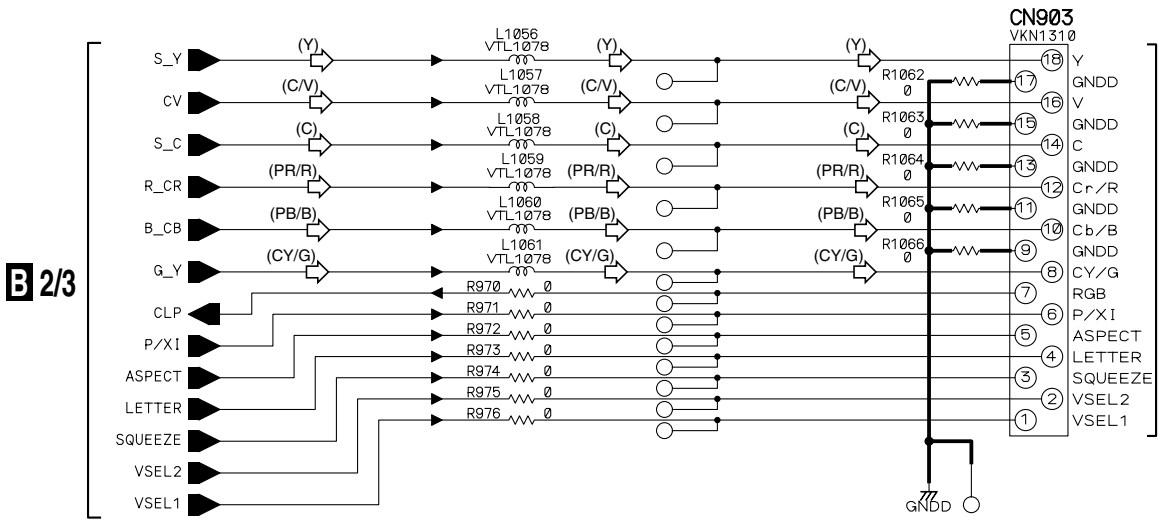



## B 2/3 AUDIO SYS




## B 3/3




(C/V): VIDEO SIGNAL ROUTE (C/V)

(Y): S VIDEO SIGNAL ROUTE (Y)

(C): S VIDEO SIGNAL ROUTE (Y)

(PR/R): VIDEO SIGNAL ROUTE (PR/R)

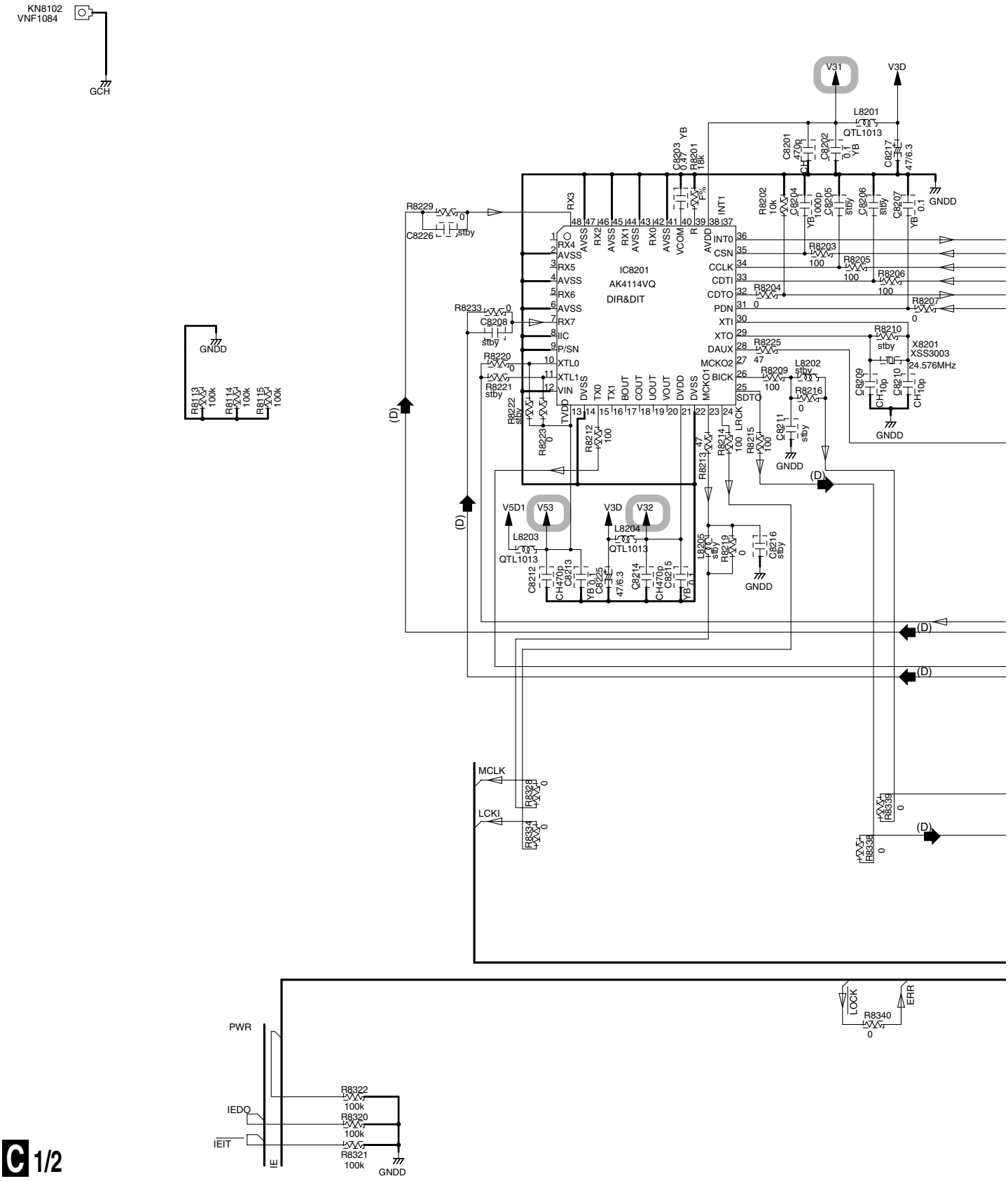
(CY/G): VIDEO SIGNAL ROUTE (CY/G)

(PB/B): VIDEO SIGNAL ROUTE (PB/B)

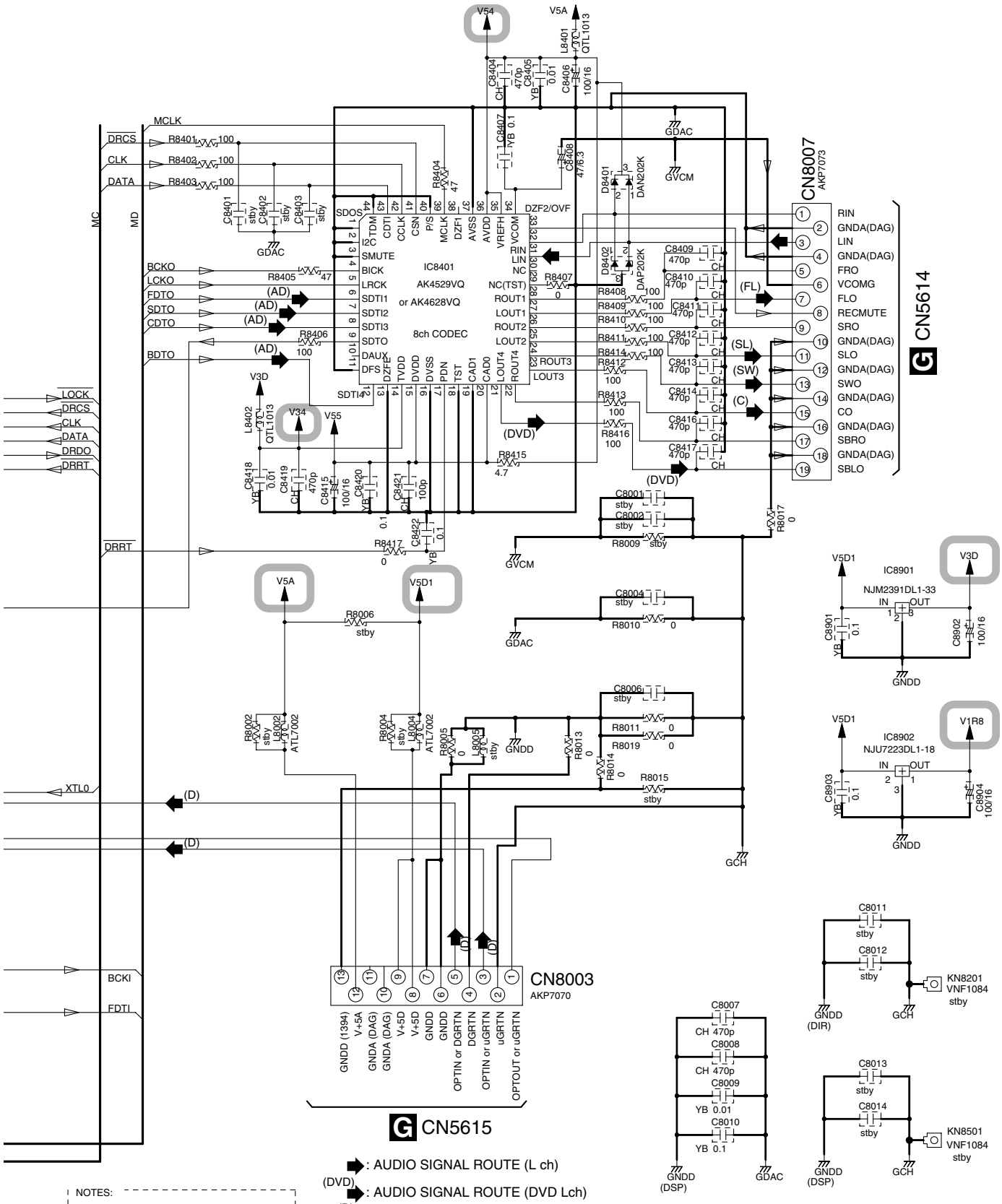
(D): AUDIO SIGNAL ROUTE (DIGITAL)

**B 3/3**

# 3.6 DSP ASSY (1/2)




C 1/2




NOTES:

NO INDICATED PARTS IS...

CCSRCH****50-T
CKSRYB****50-T
CKSRYB333K16-T
CKSRYB104K16-T
CKSRYB105K6R3-T

CEV***M***-T

RS1/16S***J-T

UNLESS OTHERWISE NOTED

→ : AUDIO SIGNAL ROUTE (L ch)

(DVD) → : AUDIO SIGNAL ROUTE (DVD Lch)

(D) → : AUDIO SIGNAL ROUTE (DIGITAL)

(AD) → : AUDIO DATA SIGNAL ROUTE

(FL) → : AUDIO SIGNAL ROUTE (Front L ch)

(SL) → : AUDIO SIGNAL ROUTE (Surround L ch)

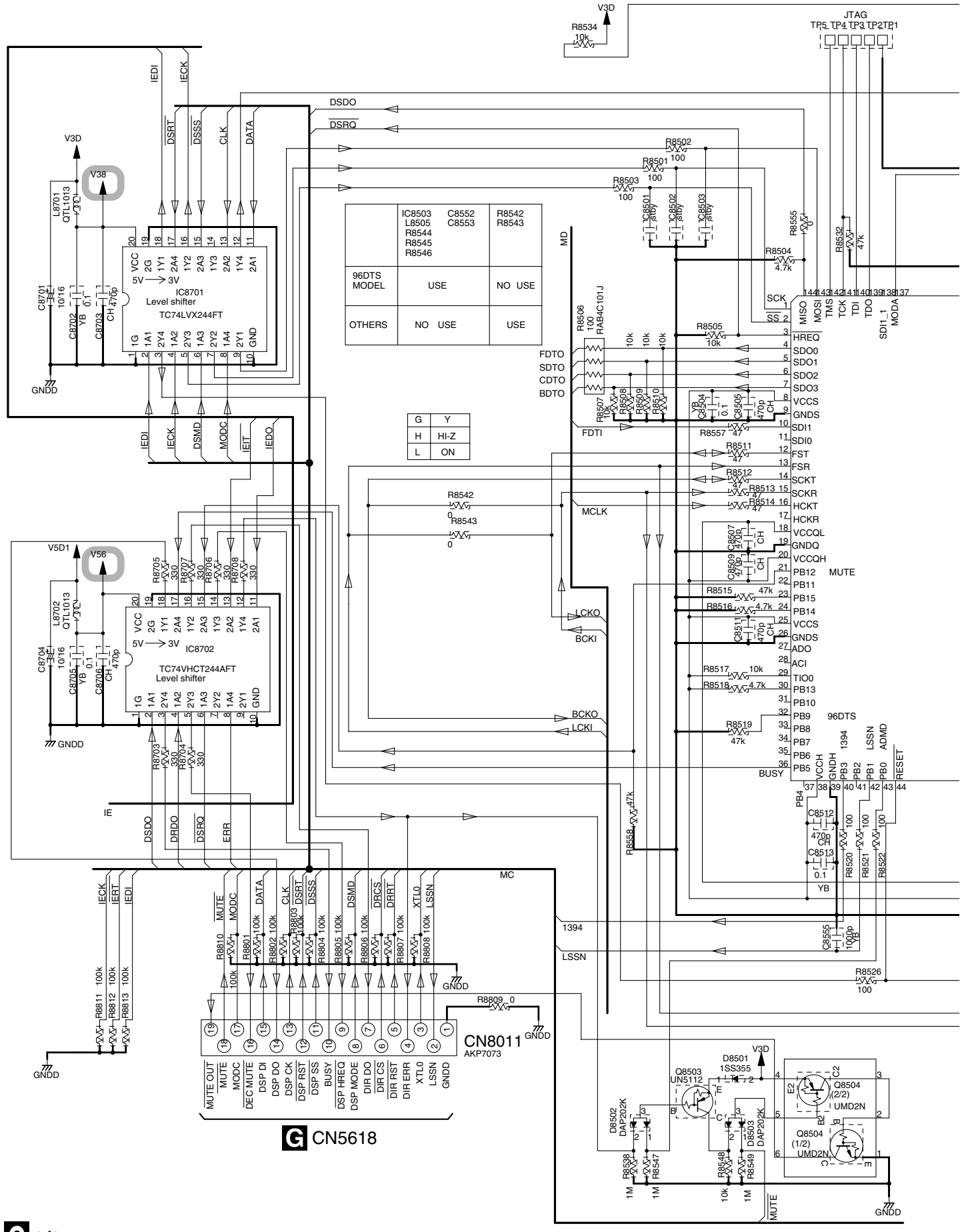
(C) → : AUDIO SIGNAL ROUTE (Center ch)

(SW) → : AUDIO SIGNAL ROUTE (Sub Woofer ch)

## C 1/2 DSP ASSY (AWX8526)

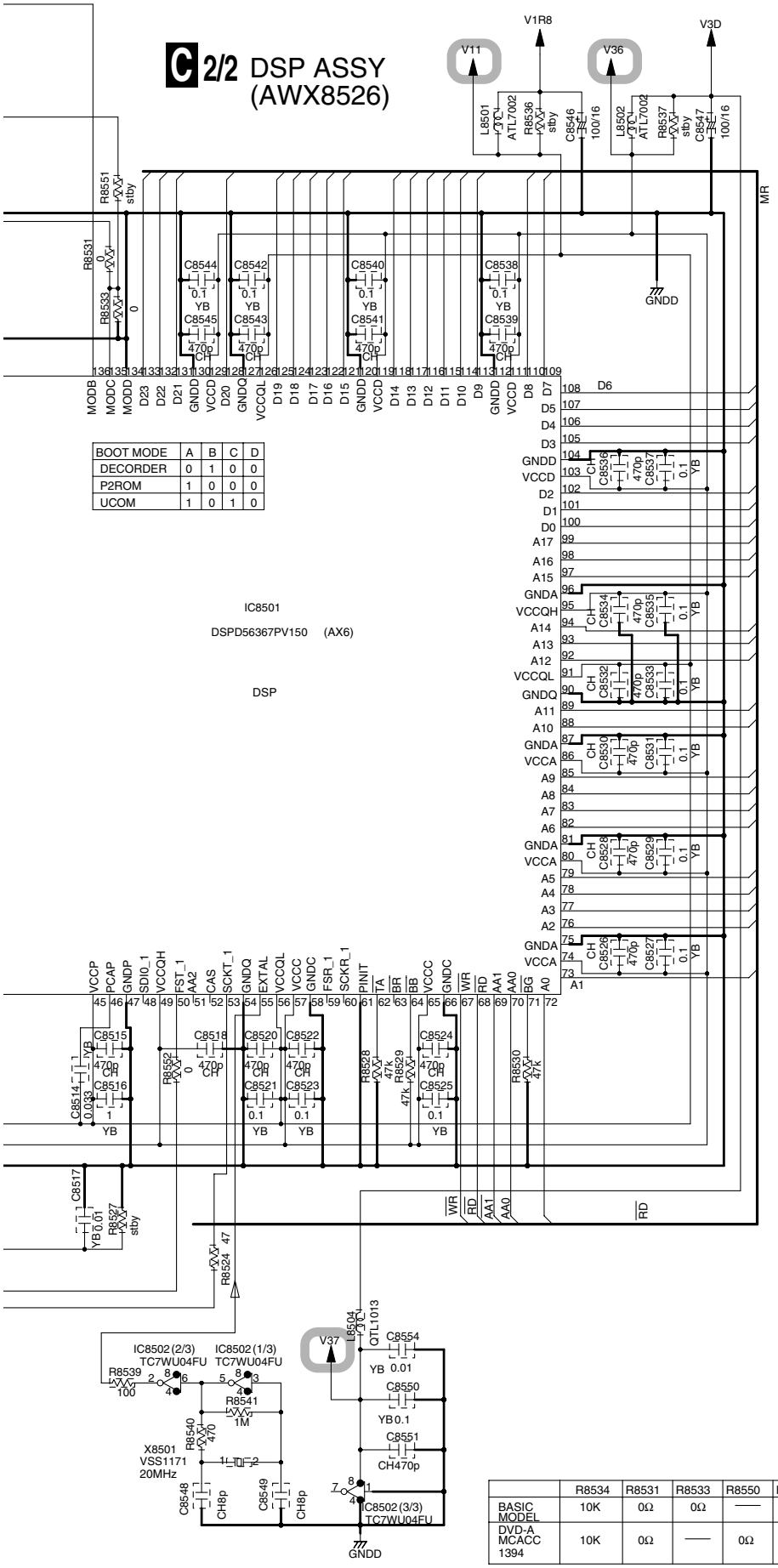
C 1/2

# 3.7 DSP ASSY (2/2)




C 2/2

# C 2/2 DSP ASSY (AWX8526)



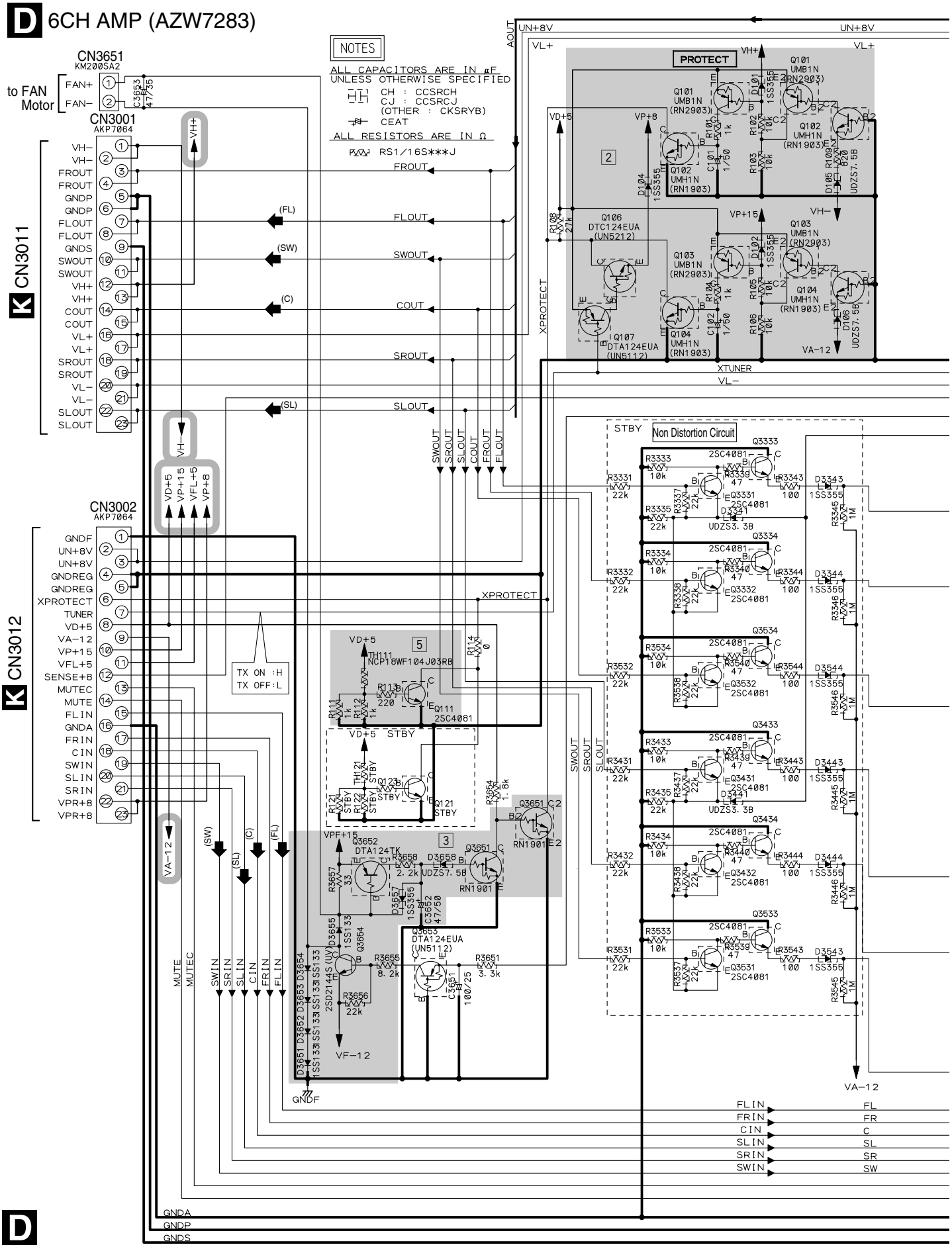

| BOOT MODE | A | B | C | D |
|---|---|---|---|---|
| DECORDER | 0 | 1 | 0 | 0 |
| P2ROM | 1 | 0 | 0 | 0 |
| UCOM | 1 | 0 | 1 | 0 |

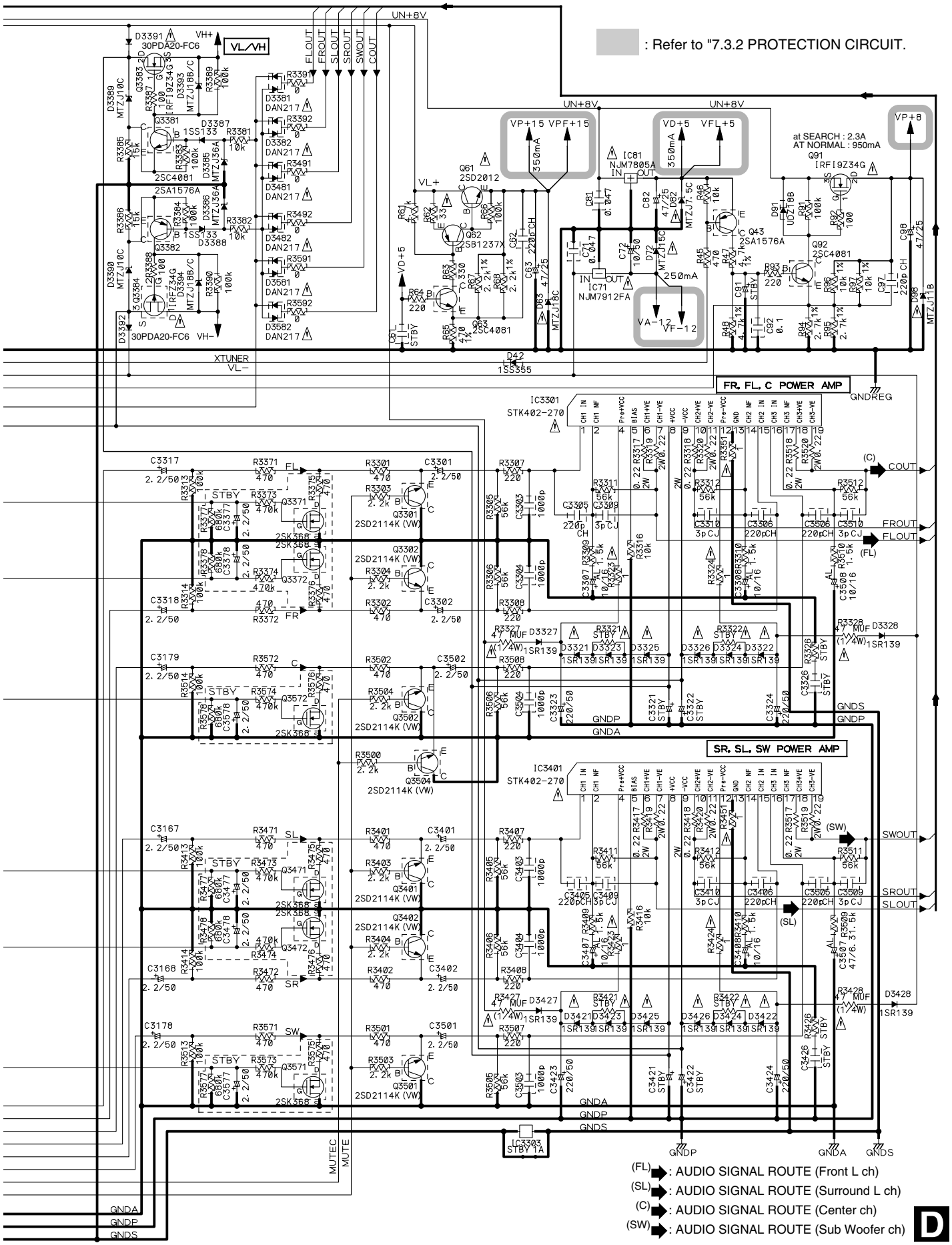
| | IC8601 C8601 C8602 C8603 C8604 L8601 | IC8602 C8605 C8606 C8607 C8608 L8602 | IC8603 C8609 C8610 L8603 | R8523 |
|---|---|---|---|---|
| BASIC MODEL | NO USE | NO USE | NO USE | NO USE |
| AAC&96DTS | USE | USE | NO USE | USE |
| MCACC | USE | NO USE | USE | USE |
| AAC&96DTS &MCACC | USE | USE | USE | USE |

| | R8534 | R8531 | R8533 | R8550 | R8551 | Q8501 |
|---|---|---|---|---|---|---|
| BASIC MODEL | 10K | 0Ω | 0Ω | — | — | — |
| DVD-A MCACC 1394 | 10K | 0Ω | — | 0Ω | — | UN5212 |

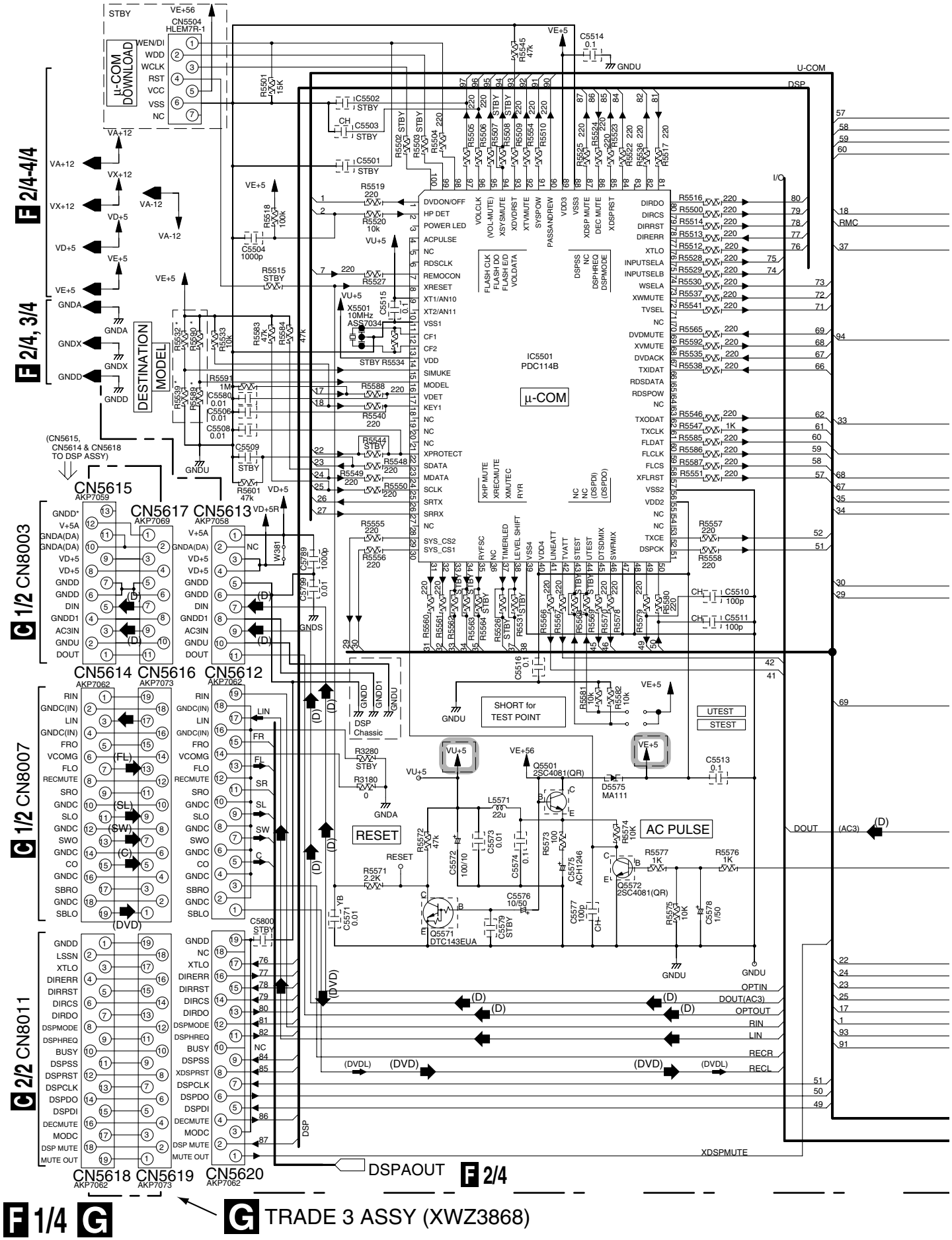
# 3.8 6CH AMP ASSY

## D 6CH AMP (AZW7283)




: Refer to "7.3.2 PROTECTION CIRCUIT.
FR, FL, C POWER AMP
SR, SL, SW POWER AMP
(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)

# 3.9 CONTROL(1/4), TRADE3 and TRADE2 ASSYS



# F 1/4 CONTROL ASSY

(XWZ3882 : XV-DV740)
(XWZ3896 : XV-DV440)

: AUDIO SIGNAL ROUTE (L ch)
(DVD) : AUDIO SIGNAL ROUTE (DVD Lch)
(D) : AUDIO SIGNAL ROUTE (DIGITAL)
(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(SL) : AUDIO SIGNAL ROUTE (Surround L ch)
(C) : AUDIO SIGNAL ROUTE (Center ch)
(SW) : AUDIO SIGNAL ROUTE (Sub Woofer ch)

NOTES

ALL CAPACITORS ARE IN µF
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH
(OTHER : CKSRYB)
AL : CEAL
(OTHER : CEAT)

ALL RESISTORS ARE IN Ω
RS1/16S***J

ALL INDUCTORS ARE IN µH
LFEA***J

: Refer to "7.3.2 PROTECTIN CIRCUIT."

M CN5601 — to DISPLAY ASSY CN5601

CN5611 52045-1545

MUTE INVERTER

H TRADE 2 ASSY (XWX3071)

CN5501 AKP7064 | CN5511 AKP7075 | CN5521 AKP7075

CN5502 AKP7064 | CN5512 AKP7075 | CN5522 AKP7075

J 1/2 CN5531 from POWER ASSY CN5531

J 1/2 CN5532 from POWER ASSY CN5532

| Destination | KUCXJ/KCXJ |
|---|---|
| R5532 | 47k |
| R5539 | — |

| MODEL | XV-DV440/740 |
|---|---|
| R5590 | — |
| R5589 | 47k |

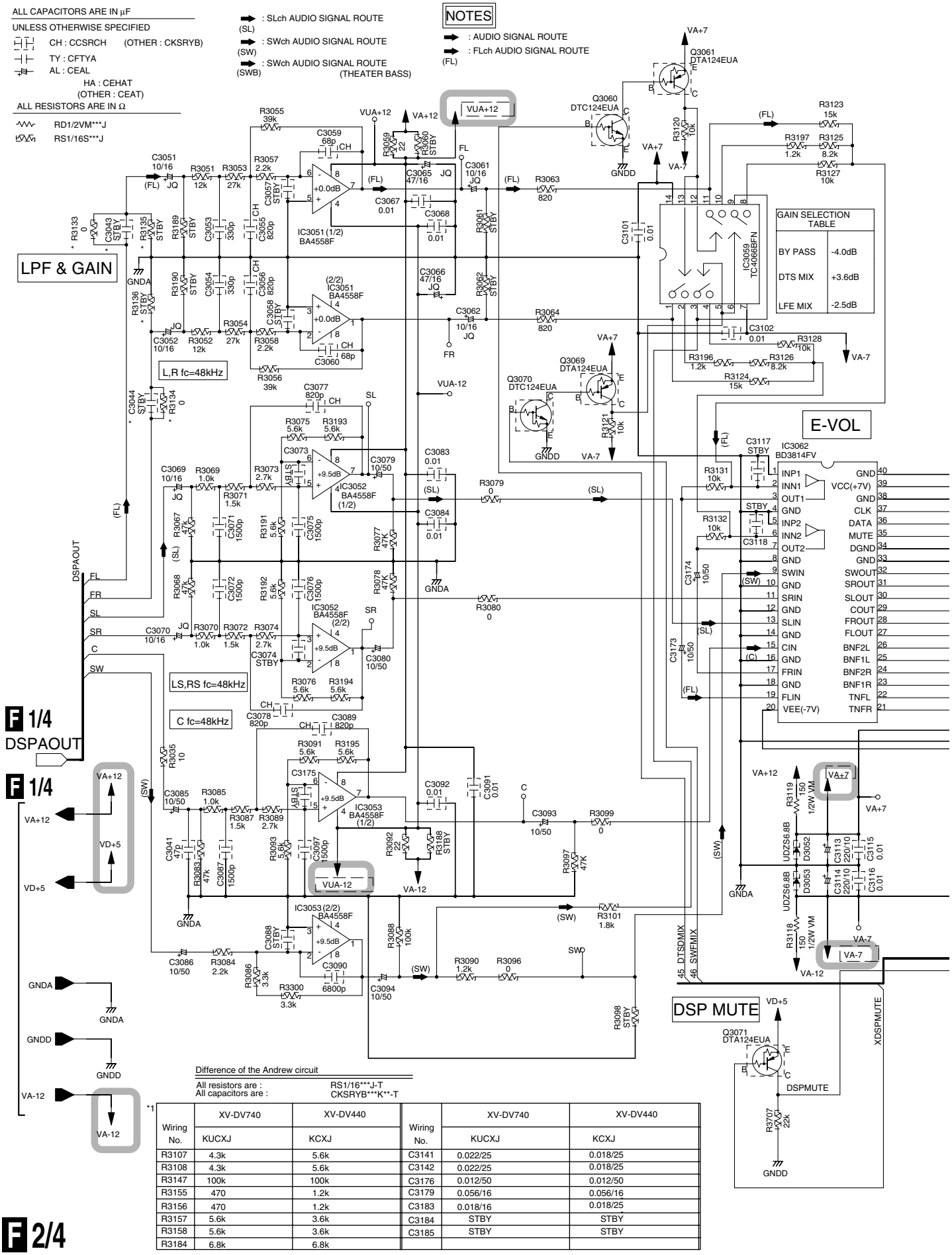
F 2/4

F 2/4-4/4

F 3/4, 4/4

F 1/4 H

# 3.10 CONTROL ASSY(2/4)




Difference of the Andrew circuit

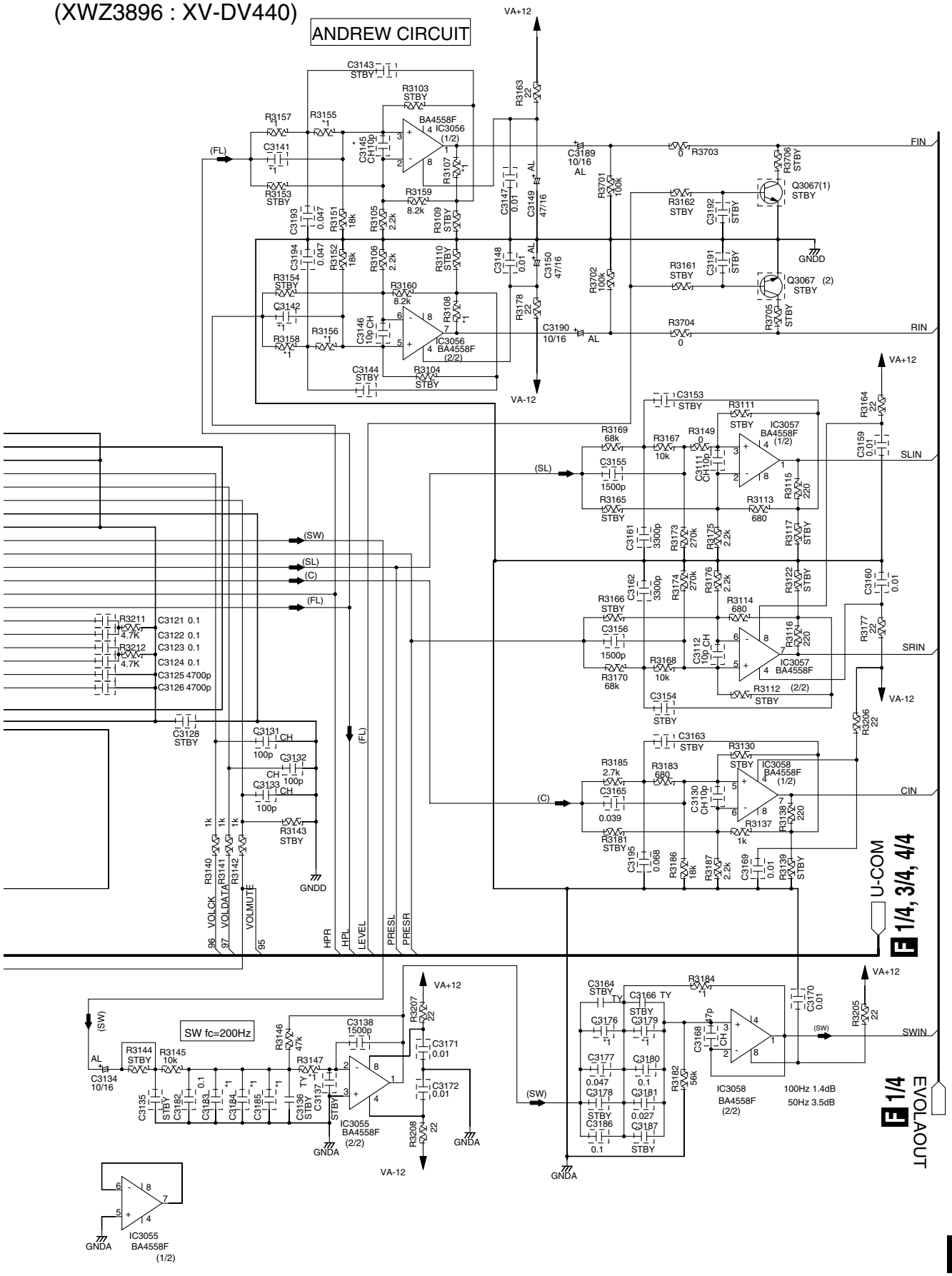
All resistors are : RS1/16***J-T
All capacitors are : CKSRYB***K**-T

*1

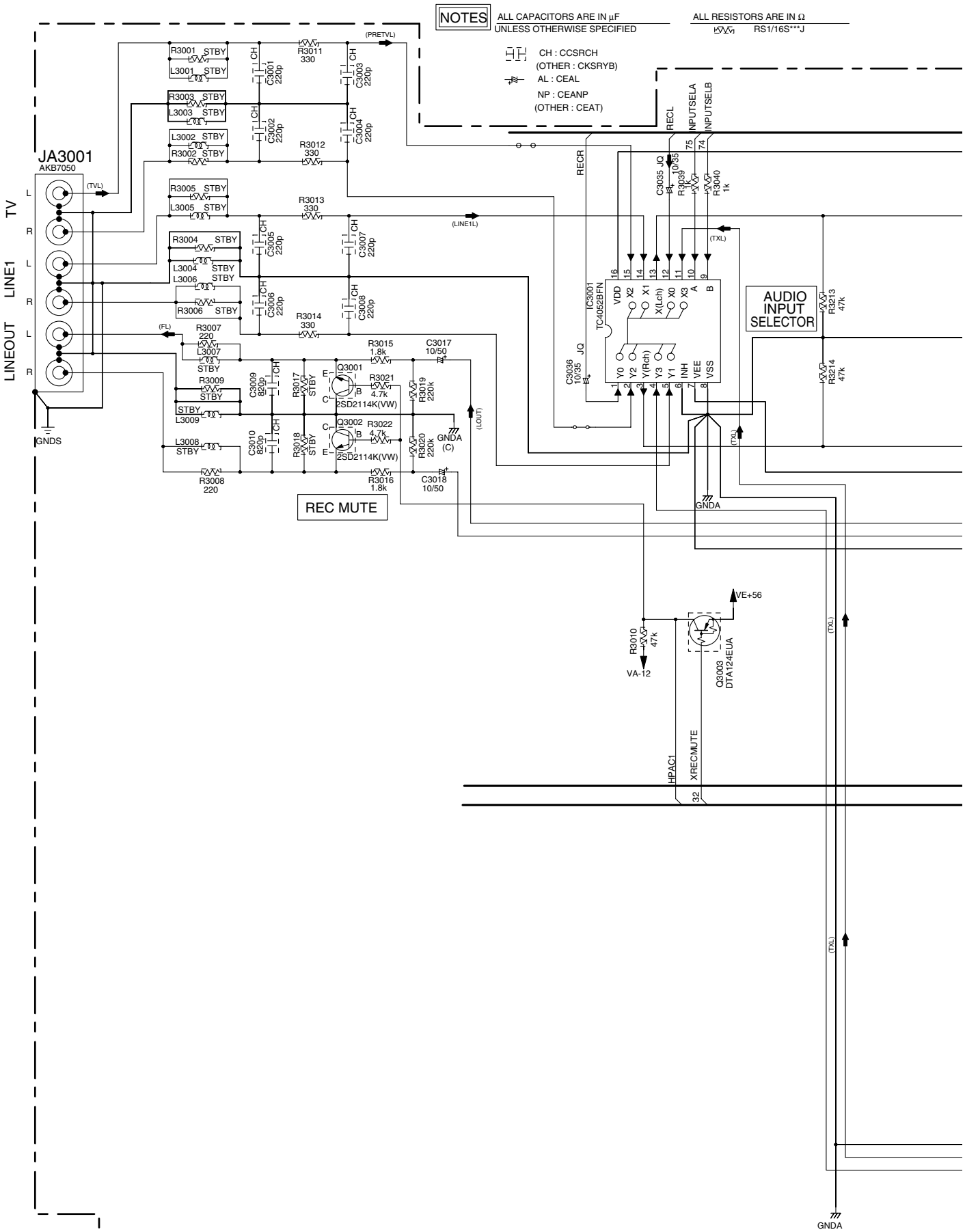
| Wiring No. | XV-DV740 KUCXJ | XV-DV440 KCXJ | Wiring No. | XV-DV740 KUCXJ | XV-DV440 KCXJ |
|---|---|---|---|---|---|
| R3107 | 4.3k | 5.6k | C3141 | 0.022/25 | 0.018/25 |
| R3108 | 4.3k | 5.6k | C3142 | 0.022/25 | 0.018/25 |
| R3147 | 100k | 100k | C3176 | 0.012/50 | 0.012/50 |
| R3155 | 470 | 1.2k | C3179 | 0.056/16 | 0.056/16 |
| R3156 | 470 | 1.2k | C3183 | 0.018/16 | 0.018/25 |
| R3157 | 5.6k | 3.6k | C3184 | STBY | STBY |
| R3158 | 5.6k | 3.6k | C3185 | STBY | STBY |
| R3184 | 6.8k | 6.8k | | | |

# F 2/4 CONTROL ASSY

(XWZ3882 : XV-DV740)
(XWZ3896 : XV-DV440)

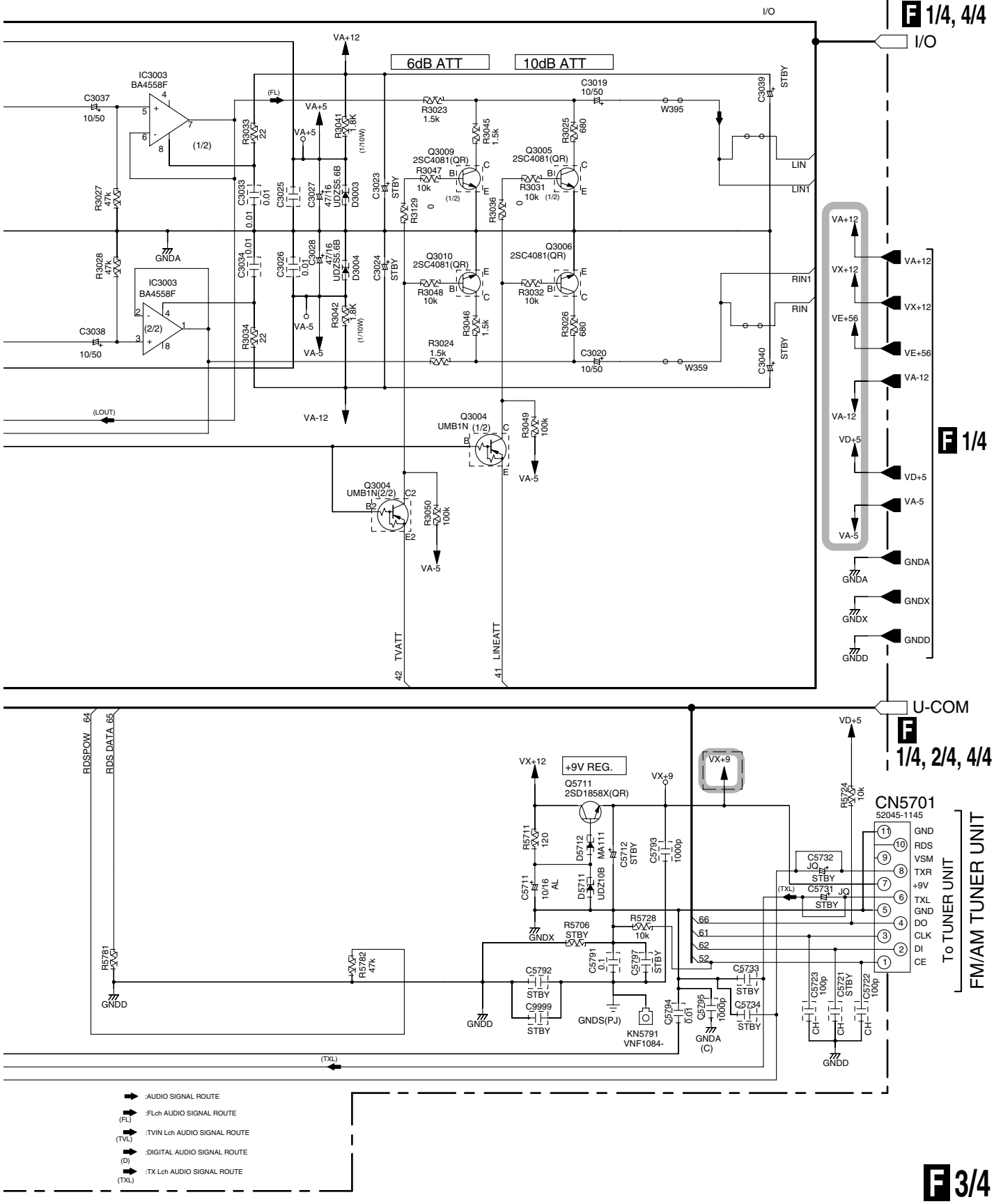


# 3.11 CONTROL ASSY(3/4)

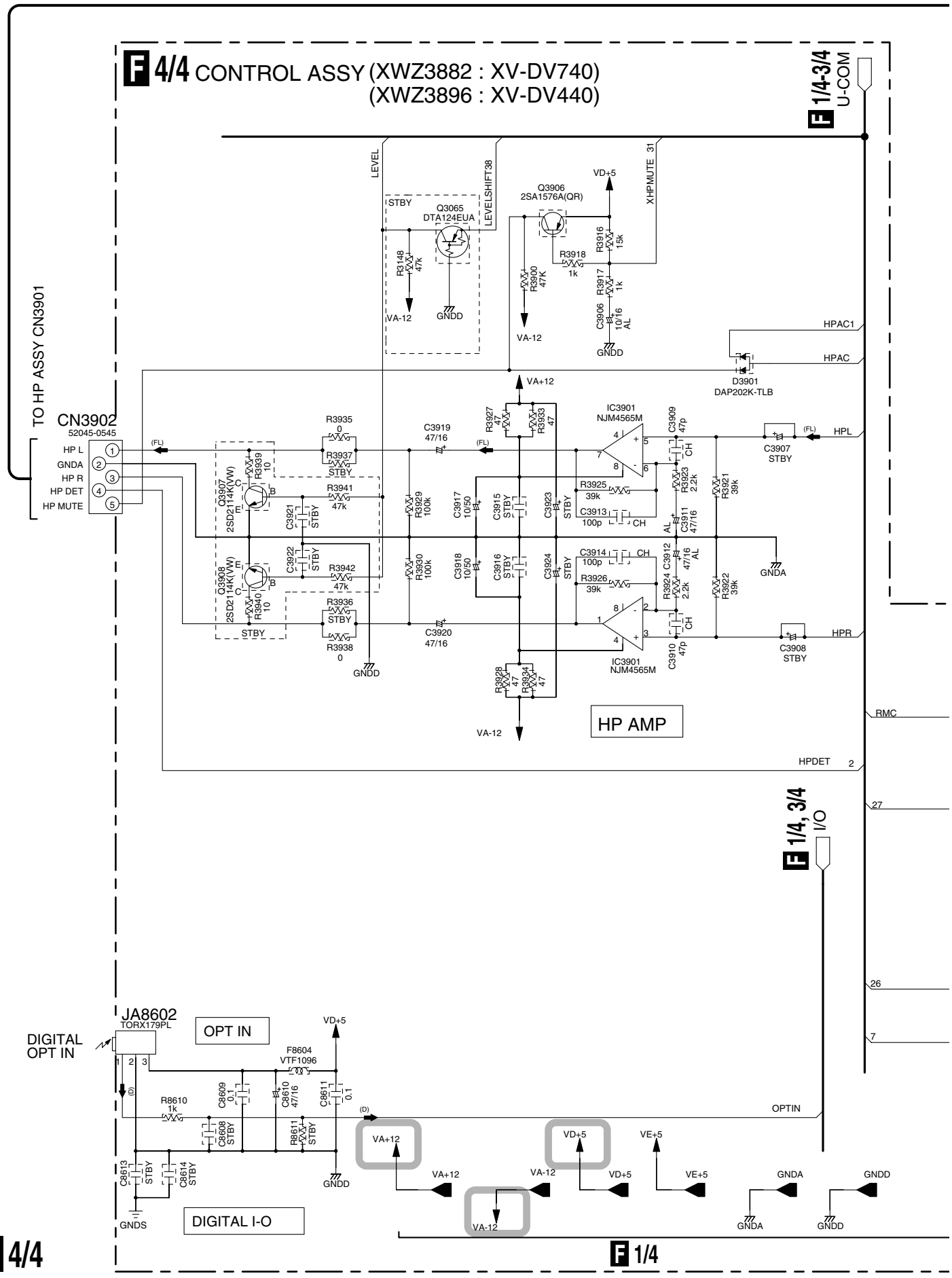



F 3/4

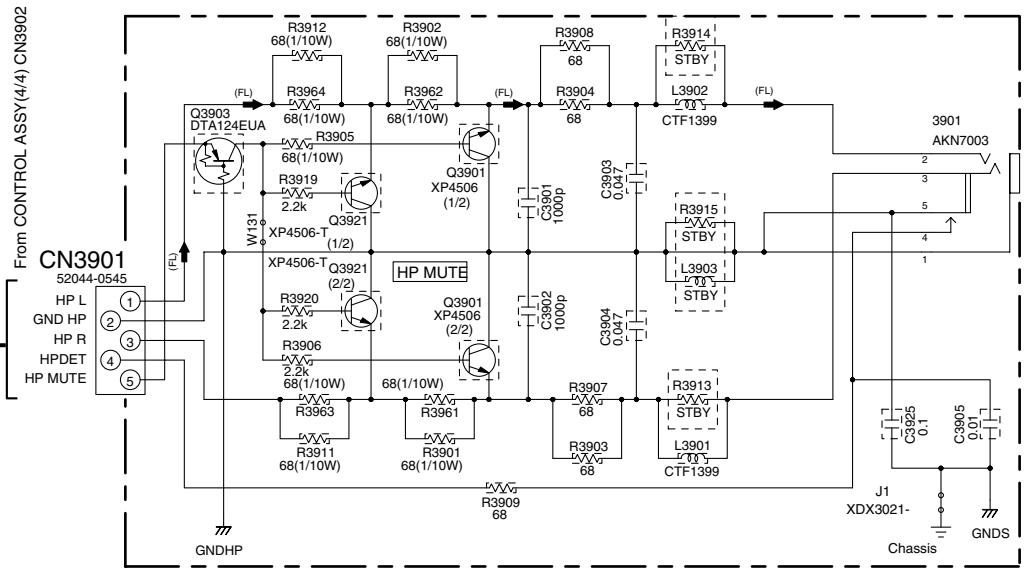
# F 3/4 CONTROL ASSY (XWZ3882 : XV-DV740)
(XWZ3896 : XV-DV440)

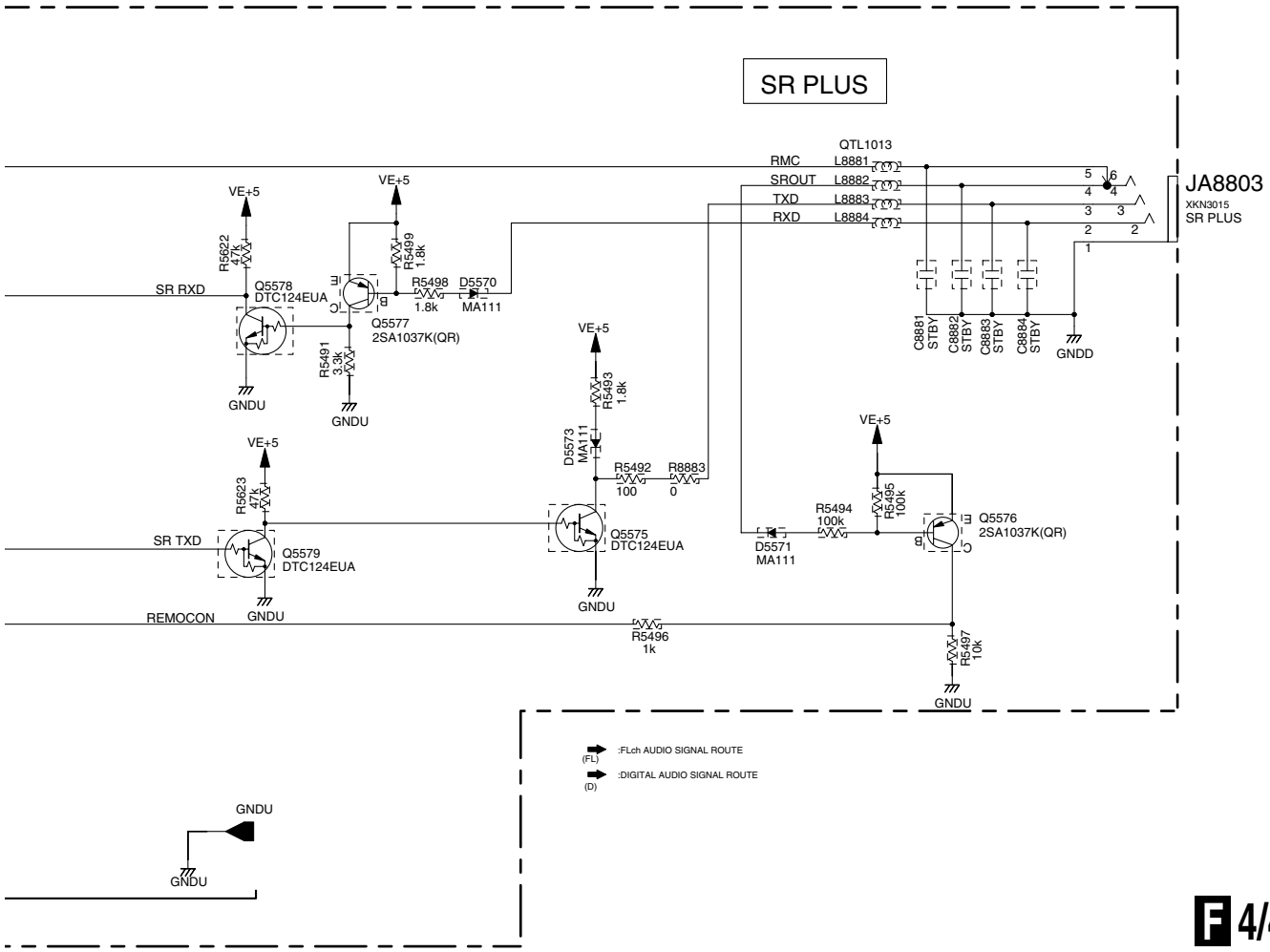


# 3.12 CONTROL ASSY(4/4) and HP ASSYS

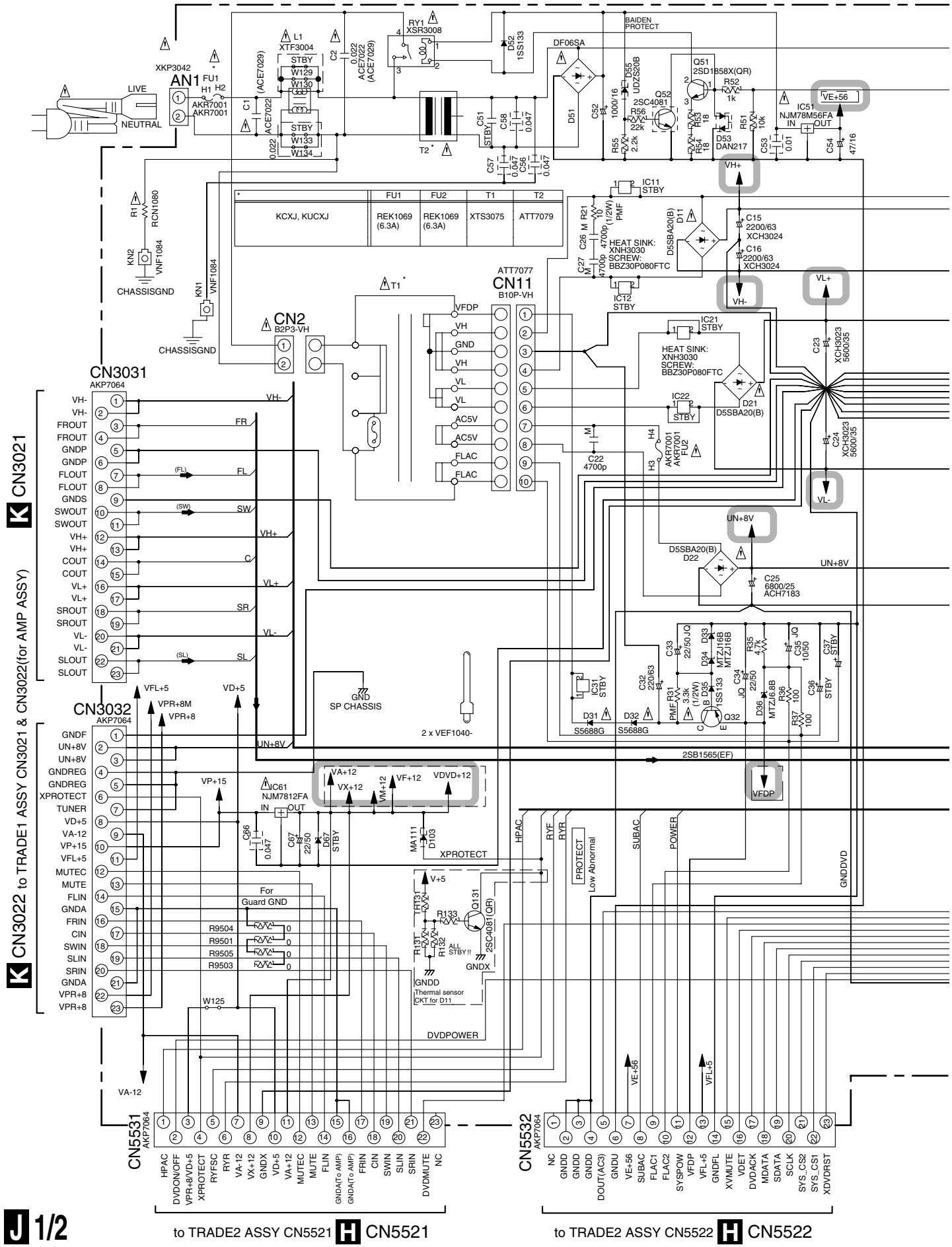


## I HP ASSY (XWZ3869)

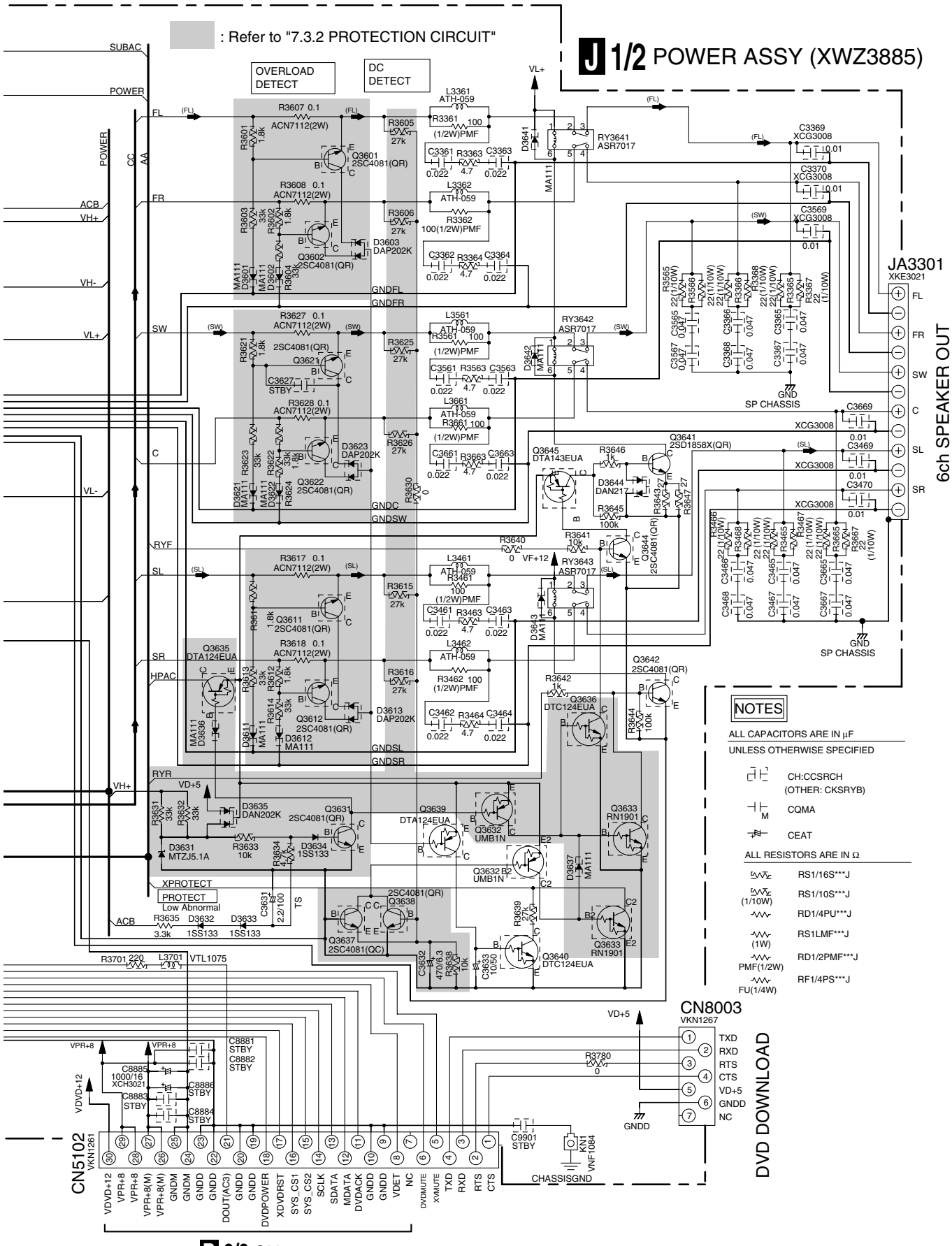


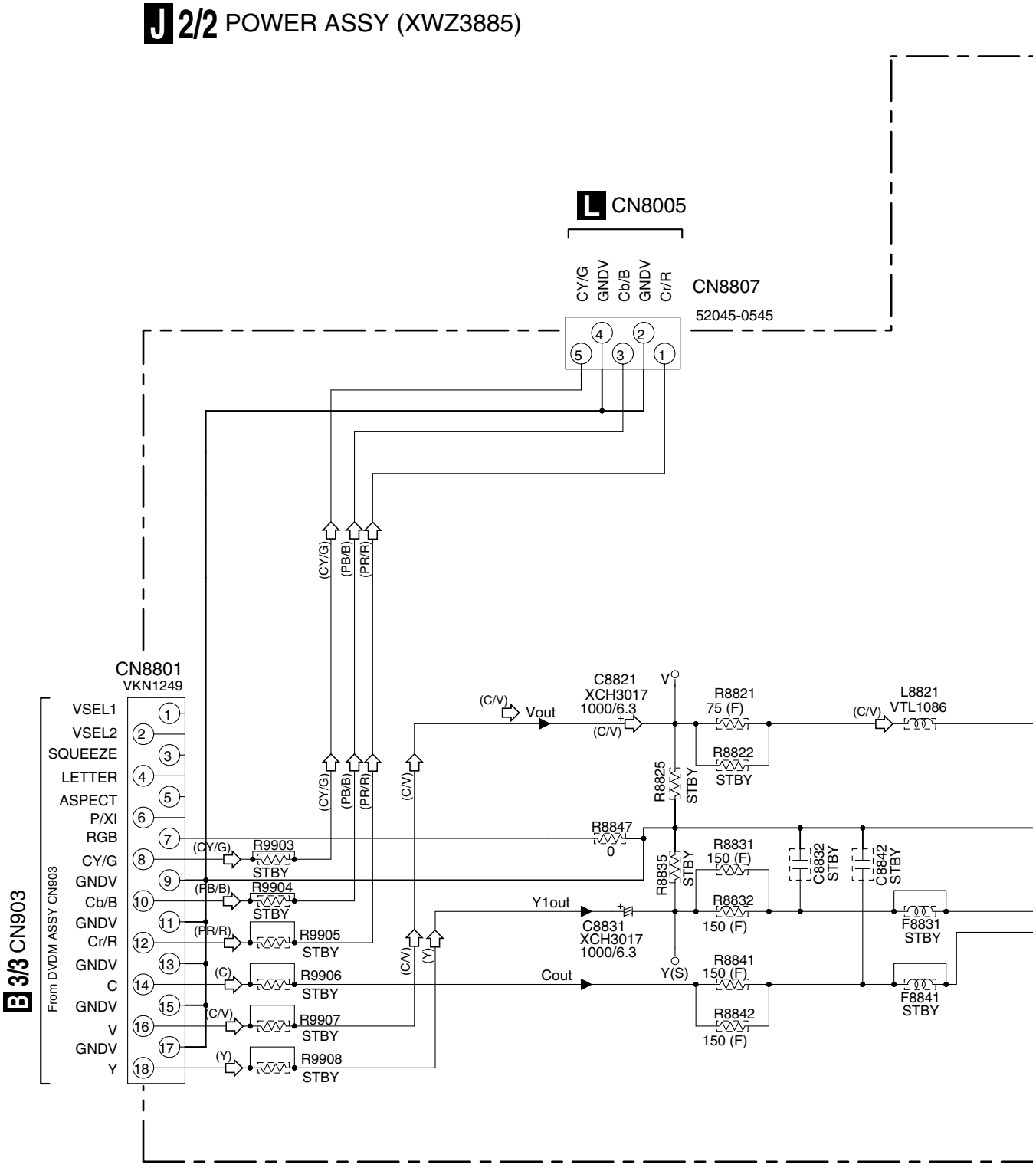
# 3.13 POWER ASSY(1/2)




| * | FU1 | FU2 | T1 | T2 |
|---|---|---|---|---|
| KCXJ, KUCXJ | REK1069 (6.3A) | REK1069 (6.3A) | XTS3075 | ATT7079 |


: Refer to "7.3.2 PROTECTION CIRCUIT"
J 1/2 POWER ASSY (XWZ3885)
OVERLOAD DETECT
DC DETECT
SUBAC
POWER
FL
FR
SW
C
RYF
SL
SR
HPAC
RYR
ACB
VH+
VH-
VL+
VL-
VD+5
VF+12
GNDFL
GNDFR
GNDC
GNDSW
GNDSL
GNDSR
XPROTECT
PROTECT
Low Abnormal
TS
VTL1075
JA3301
XKE3021
6ch SPEAKER OUT
GND
SP CHASSIS
CN8003
VKN1267
DVD DOWNLOAD
TXD
RXD
RTS
CTS
VD+5
GNDD
NC
CN5102
VKN1261
VDVD+12
VPR+8
VPR+8(M)
GNDM
GNDD
DOUT(AC3)
DVDPOWER
XDVDRST
SYS_CS1
SYS_CS2
SCLK
SDATA
MDATA
DVDACK
VDET
DVDMUTE
XVMUTE
CHASSISGND
B 3/3 CN901
from DVDM ASSY
:AUDIO SIGNAL ROUTE
:VIDEO SIGNAL ROUTE
NOTES
ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH:CCSRCH
(OTHER: CKSRYB)
CQMA
CEAT
ALL RESISTORS ARE IN Ω
RS1/16S***J
RS1/10S***J
RD1/4PU***J
RS1LMF***J
RD1/2PMF***J
RF1/4PS***J
• NOTE FOR FUSE REPLACEMENT
CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.
REPLACE WITH SAME TYPE AND RATINGS OF FUSE.
J 1/2

# 3.14 POWER ASSY(2/2) and TRADE1 ASSYS



(C/V): VIDEO SIGNAL ROUTE (C/V)
(Y): S VIDEO SIGNAL ROUTE (Y)
(C): S VIDEO SIGNAL ROUTE (Y)
(PR/R): VIDEO SIGNAL ROUTE (PR/R)
(CY/G): VIDEO SIGNAL ROUTE (CY/G)
(PB/B): VIDEO SIGNAL ROUTE (PB/B)

**NOTES**

ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH
(OTHER : CKSRYB)

ALL RESISTORS ARE IN Ω
RS1/16S***J

ALL INDUCTORS ARE IN μH
LAU***J

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491007 MFD, BY LITTELFUSE INK. FOR IC25 (AEK7021).

## K TRADE 1 ASSY (XWZ3877)

V+12M → J 1/2 V+12M
VD+5 → J 1/2 VD+5

### VIDEO OUT

JA8803 VKB1122
(C/V) (C/V) V
R8823 STBY
C8823 STBY
CN8802 AKP7179
(Y) Y
(C) C
Chassis

VIDEO OUT
S-VIDEO OUT

### J 1/2 CN3031 — TO POWER ASSY CN3031

CN3021 AKP7075

| | |
|---|---|
| 1 | VH- |
| 2 | VH- |
| 3 | FROUT |
| 4 | FROUT |
| 5 | GNDP |
| 6 | GNDP |
| 7 | FLOUT |
| 8 | FLOUT |
| 9 | GNDS |
| 10 | SWOUT |
| 11 | SWOUT |
| 12 | VH+ |
| 13 | VH+ |
| 14 | COUT |
| 15 | COUT |
| 16 | VL+ |
| 17 | VL+ |
| 18 | SROUT |
| 19 | SROUT |
| 20 | VL- |
| 21 | VL- |
| 22 | SLOUT |
| 23 | SLOUT |

IC25 SUMI TUBE ADN7004 7A AEK7021
W309

### D CN3001 — TO AMP ASSY CN3001

CN3011 AKP7075

| | |
|---|---|
| 1 | VH- |
| 2 | VH- |
| 3 | FROUT |
| 4 | FROUT |
| 5 | GNDP |
| 6 | GNDP |
| 7 | FLOUT |
| 8 | FLOUT |
| 9 | GNDS |
| 10 | SWOUT |
| 11 | SWOUT |
| 12 | VH+ |
| 13 | VH+ |
| 14 | COUT |
| 15 | COUT |
| 16 | VL+ |
| 17 | VL+ |
| 18 | SROUT |
| 19 | SROUT |
| 20 | VL- |
| 21 | VL- |
| 22 | SLOUT |
| 23 | SLOUT |

### J 1/2 CN3032 — TO POWER ASSY CN3032

CN3022 AKP7075

| | |
|---|---|
| 1 | GNDF |
| 2 | UN+8V |
| 3 | UN+8V |
| 4 | GNDREG |
| 5 | GNDREG |
| 6 | XPROTECT |
| 7 | TUNER |
| 8 | VD+5 |
| 9 | VA-12 |
| 10 | VP+15 |
| 11 | VFL+5 |
| 12 | MUTEC |
| 13 | MUTE |
| 14 | FLIN |
| 15 | GNDA |
| 16 | FRIN |
| 17 | CIN |
| 18 | SWIN |
| 19 | SLIN |
| 20 | SRIN |
| 21 | GNDA |
| 22 | VPR+8 |
| 23 | VPR+8 |

R98 27k

### D CN3002 — TO AMP ASSY CN3002

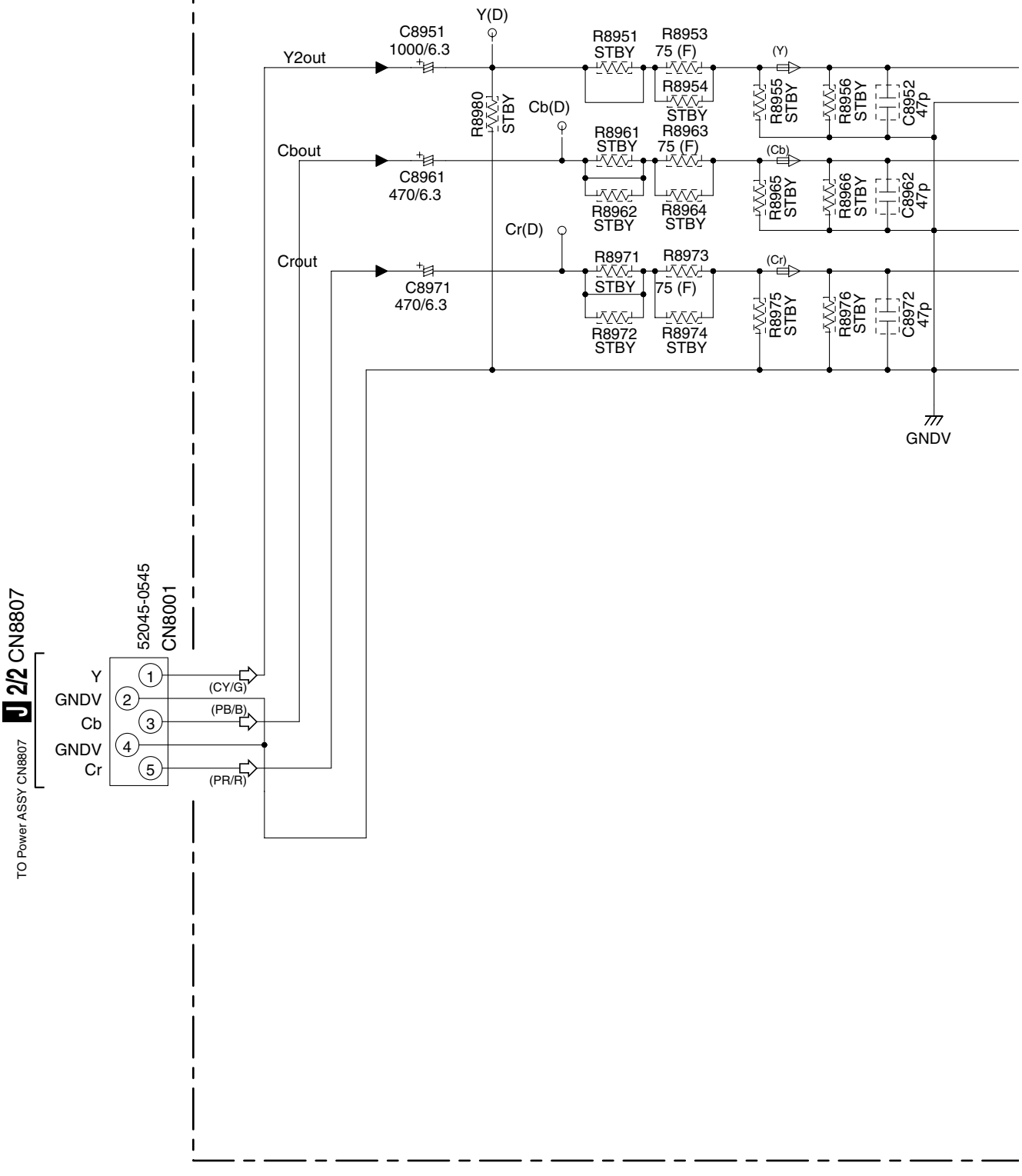
CN3012 AKP7075

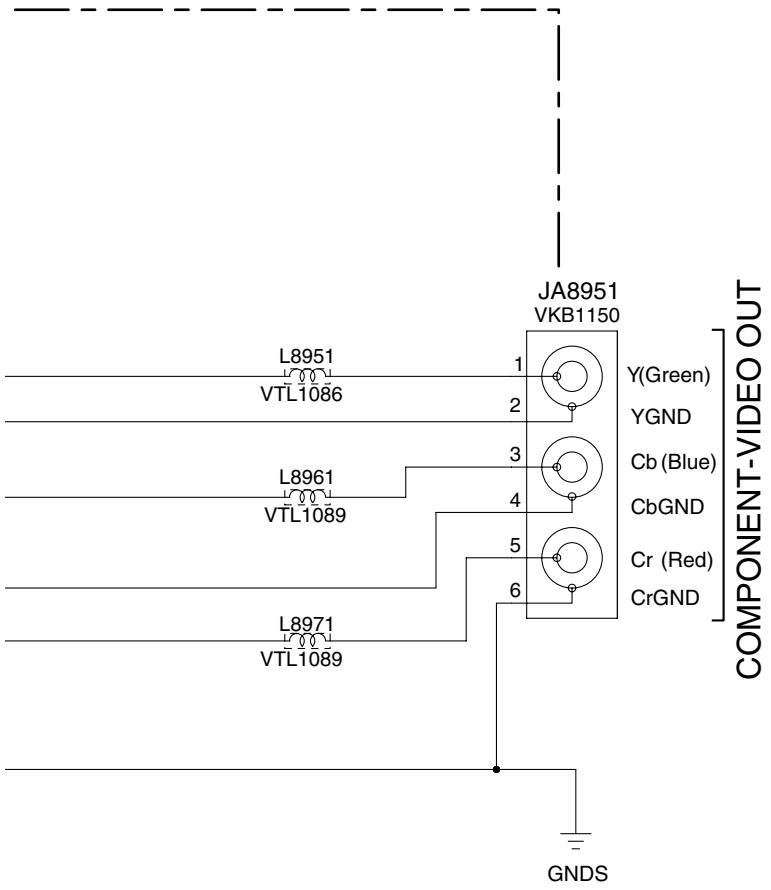
| | |
|---|---|
| 1 | GNDF |
| 2 | UN+8V |
| 3 | UN+8V |
| 4 | GNDREG |
| 5 | GNDREG |
| 9 | XPROTECT |
| 7 | TUNER |
| 8 | VD+5 |
| 9 | VA-12 |
| 10 | VP+15 |
| 11 | VFL+5 |
| 12 | SENSE+8 |
| 13 | MUTEC |
| 14 | MUTE |
| 15 | FLIN |
| 16 | GNDA |
| 17 | FRIN |
| 18 | CIN |
| 19 | SWIN |
| 20 | SLIN |
| 21 | SRIN |
| 22 | VPR+8 |
| 23 | VPR+8 |

J 2/2 K

# 3.15 VIDEO ASSY

## L VIDEO ASSY (XWZ3875)






NOTES

ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED

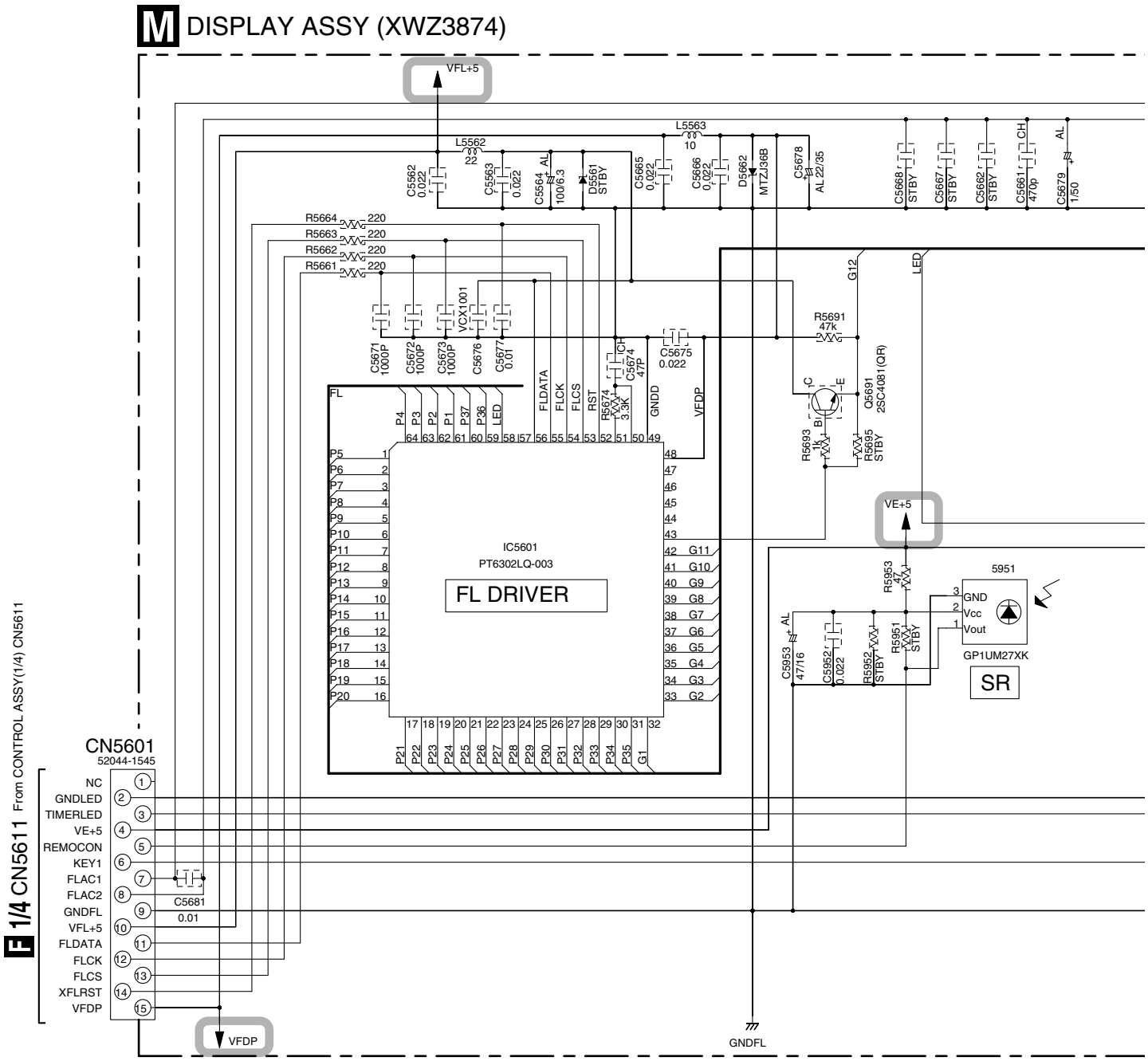
CH : CCSRCH
(OTHER : CKSRYB)
AL : CEAL
NP : CEANP
(OTHER : CEAT)

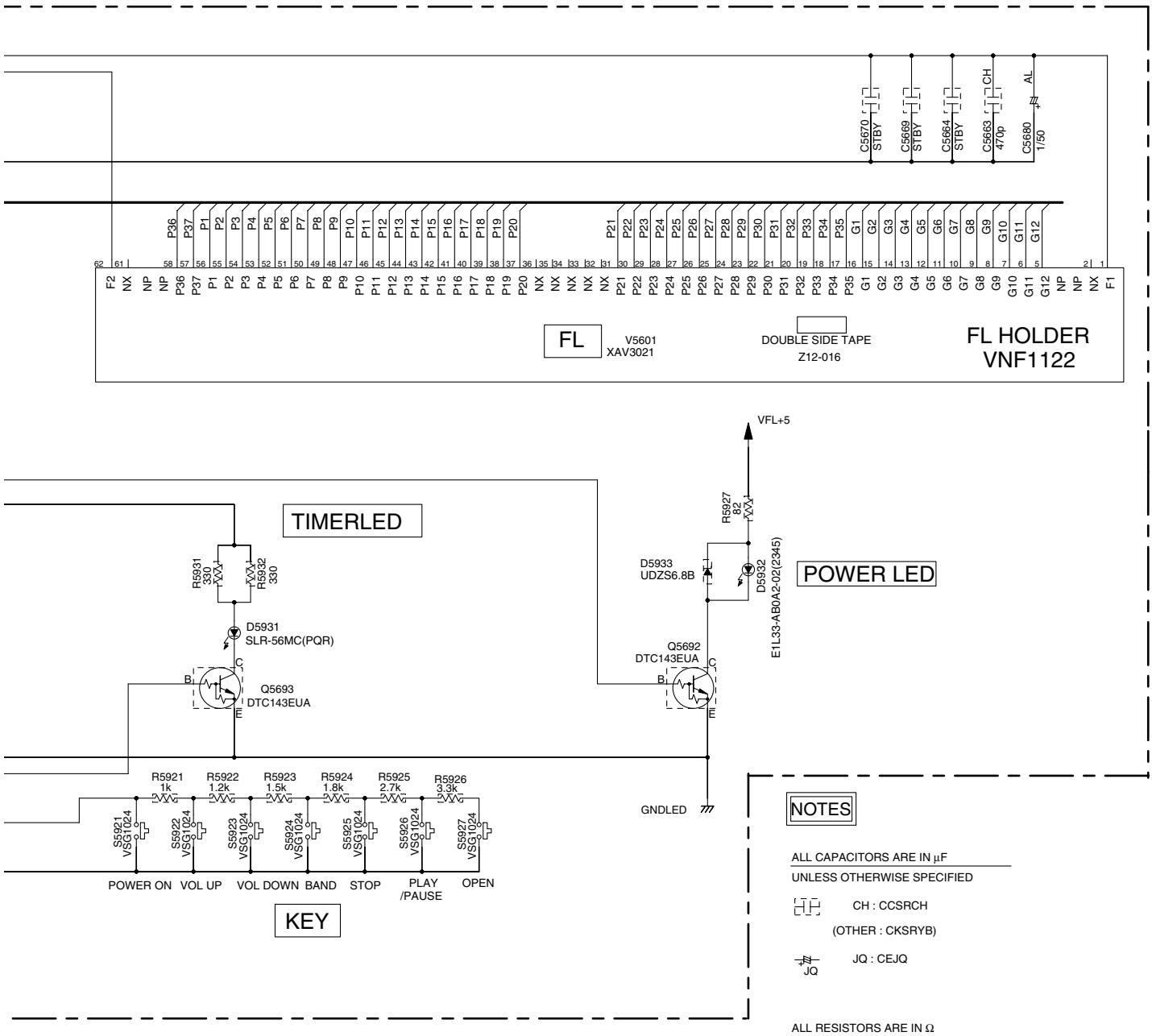
ALL RESISTORS ARE IN Ω

RS1/16S***J

(PR/R) : VIDEO SIGNAL ROUTE (PR/R)
(CY/G) : VIDEO SIGNAL ROUTE (CY/G)
(PB/B) : VIDEO SIGNAL ROUTE (PB/B)

# 3.16 DISPALY ASSY






NOTES

ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED

CH : CCSRCH
(OTHER : CKSRYB)

JQ : CEJQ

ALL RESISTORS ARE IN Ω

RS1/16S***J

ALL INDUCTORS ARE IN μH

LAU***J

NO MARK DIODE

1SS133

## Switches

**DISPLAY ASSY**

S5921 : ⏻ STANDBY/ON
S5922 : UP + ] VOLUME
S5923 : – DOWN ]
S5924 : FM/AM
S5925 : ■ (STOP)
S5926 : ▶/❚❚ DVD/CD (PLAY/PAUSE)
S5927 : ⏏ OPEN/CLOSE

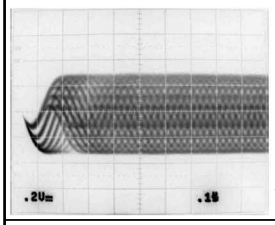
# 3.17 WAVEFORMS

Note : The encircled numbers denote measuring point in the schematic diagram.

## B DVDM ASSY

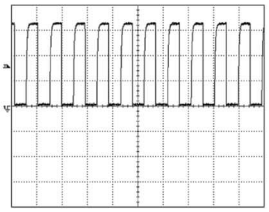
Measurement condition ; No. 1, 2 and 12 to 17 : MJK1, Title 1-chp 1
No. 8 : CD, ABEX-784 Track 1
No. 13, 14 and 17 : DVD-REF-A1, T2-Chap.1
No. 3 to 5 : DVD-REF-A1, T2-Chap.19

**(1) IC301 - pin 4 [RFOUT]**
V: 200mV/div. H: 0.1µsec/div.

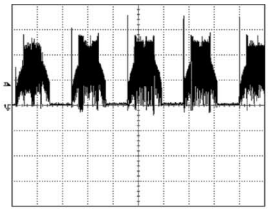



← GND

**(2) IC301 - pin 36 [FG]**
V: 1V/div. H: 5msec/div.

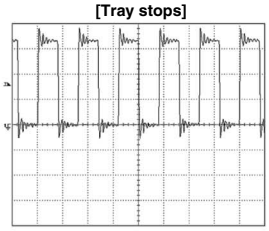


**(3) IC101 - pin 14 [A1], 13 [A2], 12 [A3]**
V: 2V/div. H: 2msec/div.

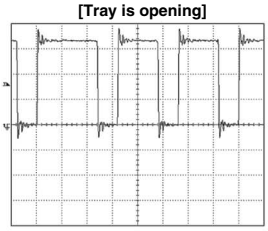


**(4) IC301 - pin 55 [LOAD_DRV]**
V: 1V/div. H: 500nsec/div.

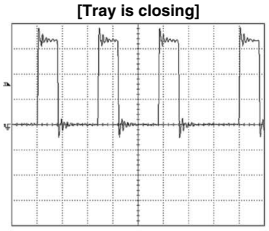
**[Tray stops]**



**[Tray is opening]**

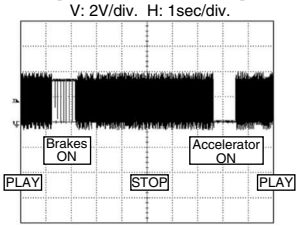


**[Tray is closing]**

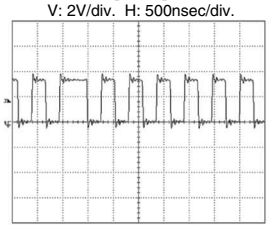


**(5) IC301 - pin 44 [SPDL_PDM]**

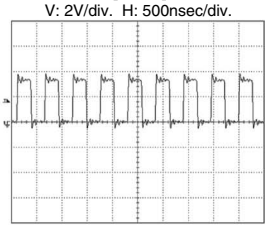
**[PLAY → STOP → PLAY]**
V: 2V/div. H: 1sec/div.



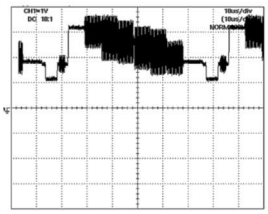

**[PLAY]**
V: 2V/div. H: 500nsec/div.



**[STOP]**
V: 2V/div. H: 500nsec/div.

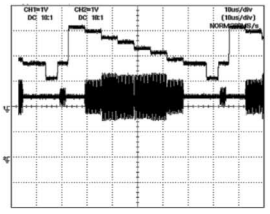


**(6) IC501 - pin 23 [Composite Video out]**
V: 1V/div. H: 10µsec/div.



**(7) IC501 - pin 21 [S Video out-Y]**
V: 1V/div. H: 10µsec/div.

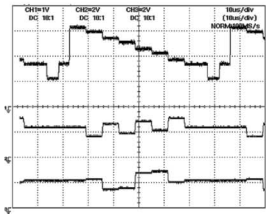
**(8) IC501 - pin 26 [S Video out-C]**
V: 1V/div. H: 10µsec/div.




**(9) IC501 - pin 20 [Component Video out-Y]**
V: 1V/div. H: 10µsec/div.

**(10) IC501 - pin 18 [Component Video out-Pb]**
V: 2V/div. H: 10µsec/div.

**(11) IC501 - pin 16 [Component Video out-Pr]**
V: 2V/div. H: 10µsec/div.



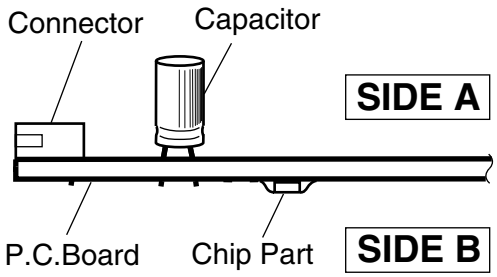
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

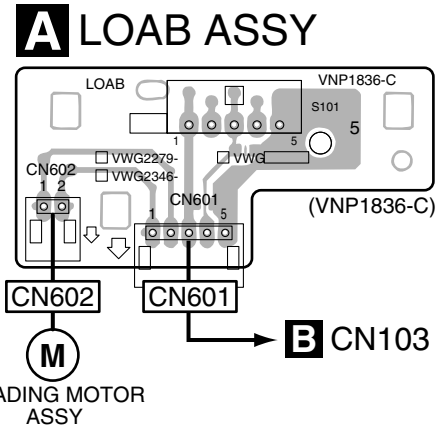
| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|---|---|---|
| B C E | B C E B C E | Transistor |
| B C E | B C E B C E | Transistor with resistor |
| D G S | D G S D G S | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.

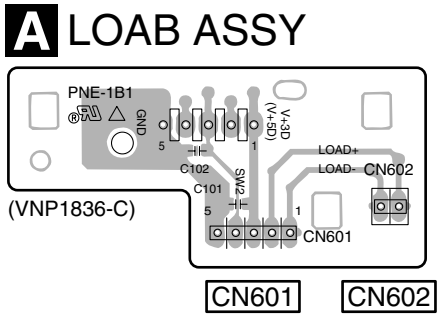



## 4.1 LOAB ASSY

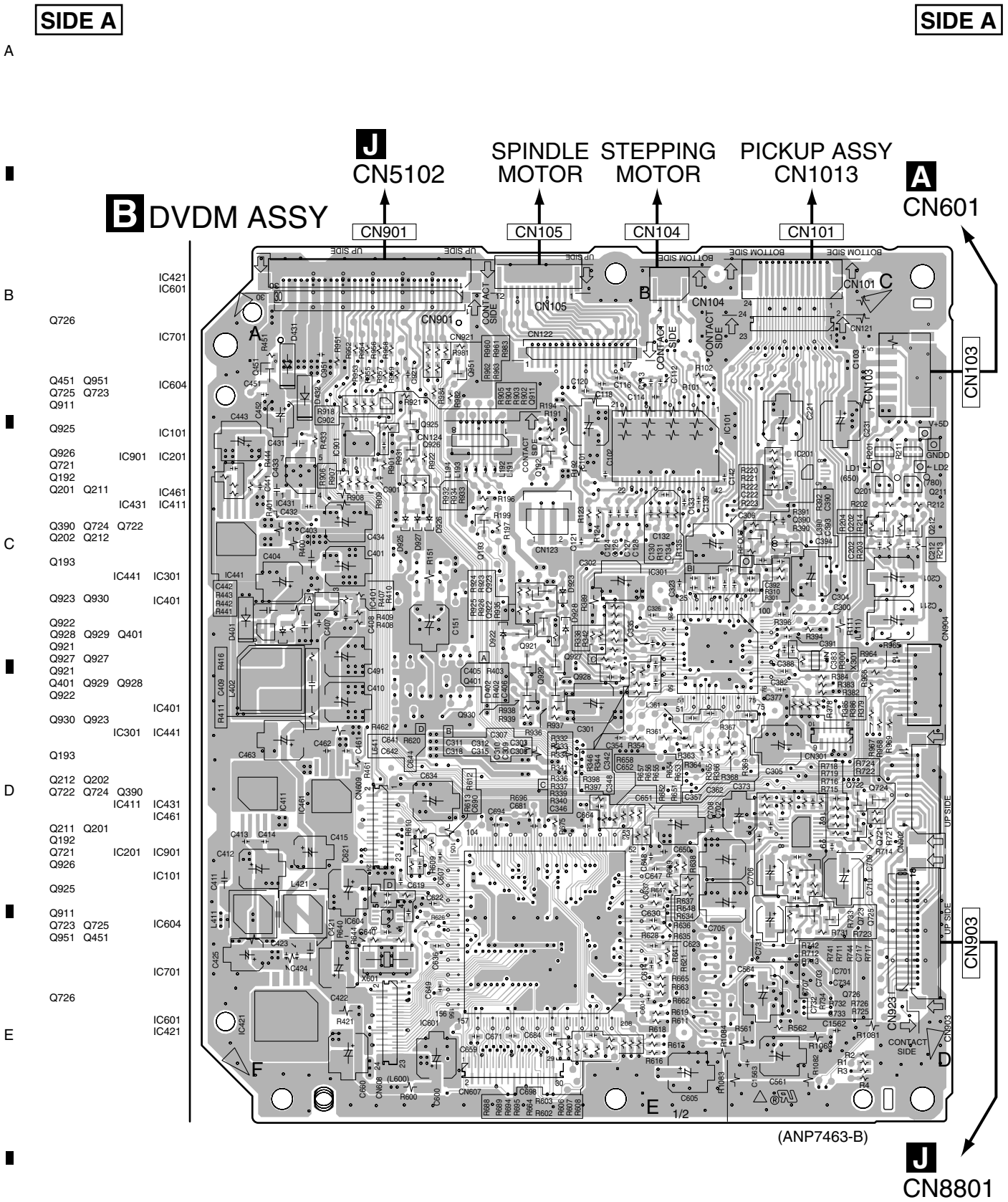
SIDE A




SIDE B



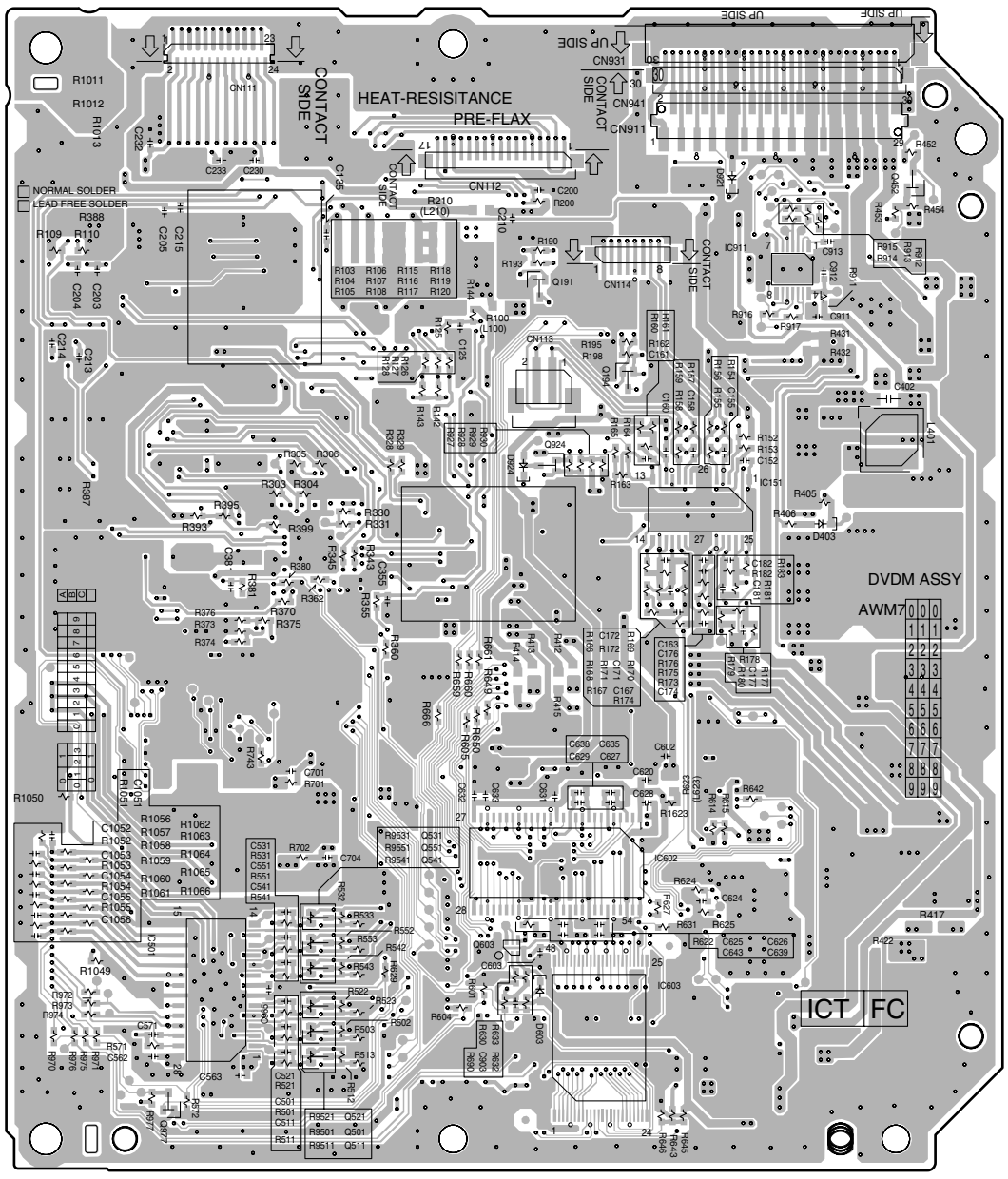
## 4.2 DVDM ASSY


SIDE A
SIDE A
J
CN5102
SPINDLE MOTOR
STEPPING MOTOR
PICKUP ASSY CN1013
A
CN601
B DVDM ASSY
CN901
CN105
CN104
CN101
CN103
CN903
J
CN8801
IC421
IC601
Q726
IC701
Q451 Q951
Q725 Q723
Q911
IC604
Q925
IC101
Q926
IC901
IC201
Q721
Q192
Q201 Q211
IC461
IC431
IC411
Q390 Q724 Q722
Q202 Q212
Q193
IC441
IC301
Q923 Q930
IC401
Q922
Q928 Q929 Q401
Q921
Q927 Q927
Q921
Q401 Q929 Q928
Q922
IC401
Q930 Q923
IC301
IC441
Q193
Q212 Q202
Q722 Q724 Q390
IC411
IC431
IC461
Q211 Q201
Q192
Q721
IC201
IC901
Q926
IC101
Q925
Q911
Q723 Q725
Q951 Q451
IC604
IC701
Q726
IC601
IC421
1/2
(ANP7463-B)

SIDE B

SIDE B

# B DVDM ASSY




(ANP7463-B)

IC603

Q603 Q452 IC501

Q541 IC602 IC911 Q551 Q531 Q191

Q194

Q924

IC151

IC151

Q924

Q194

Q191 Q531 Q551 Q541 IC911 IC602

IC501 Q452 Q603

IC603

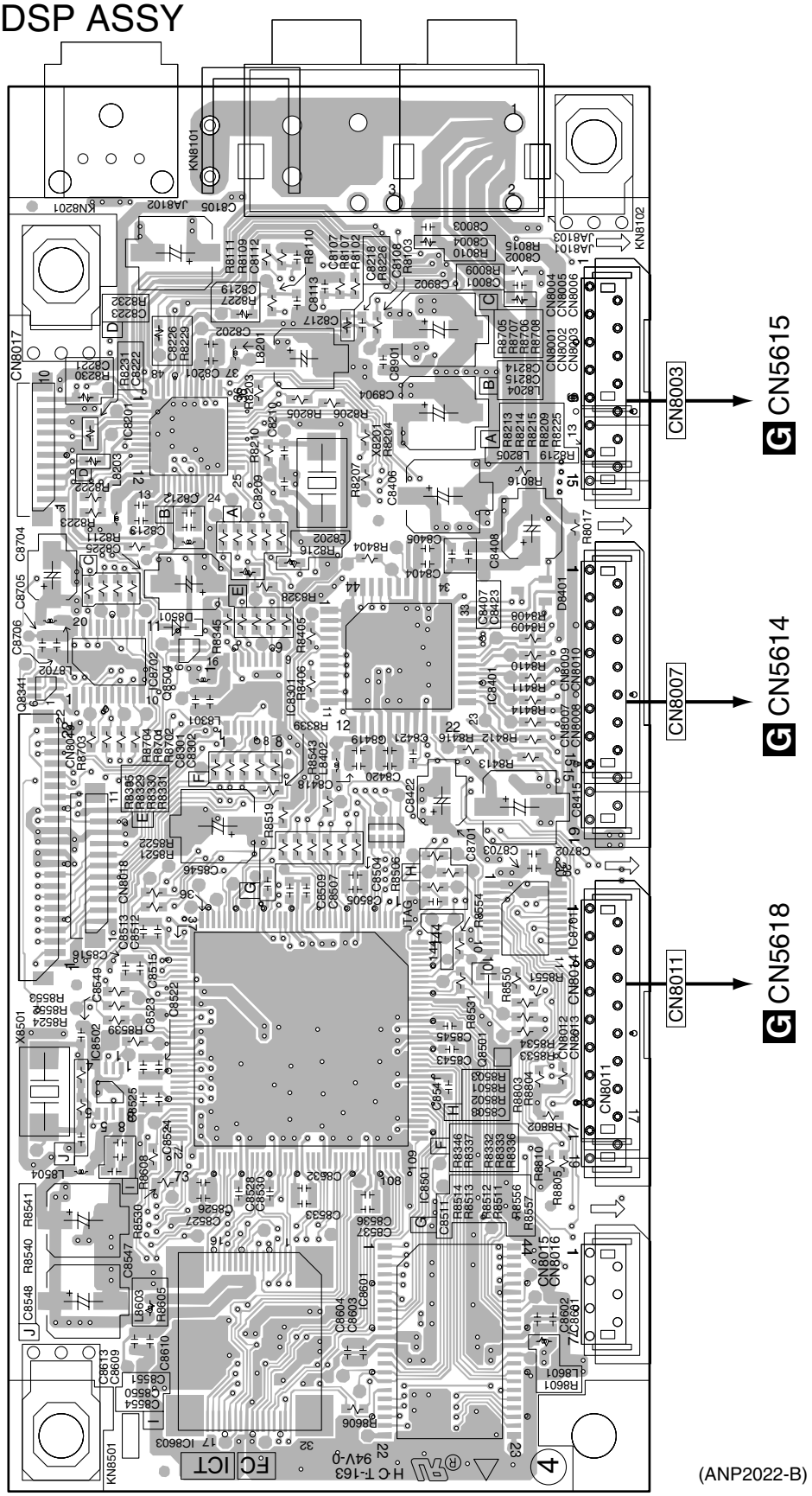
Q977 Q521 Q501 Q511

## 4.3 DSP ASSY

SIDE A

C DSP ASSY

SIDE A

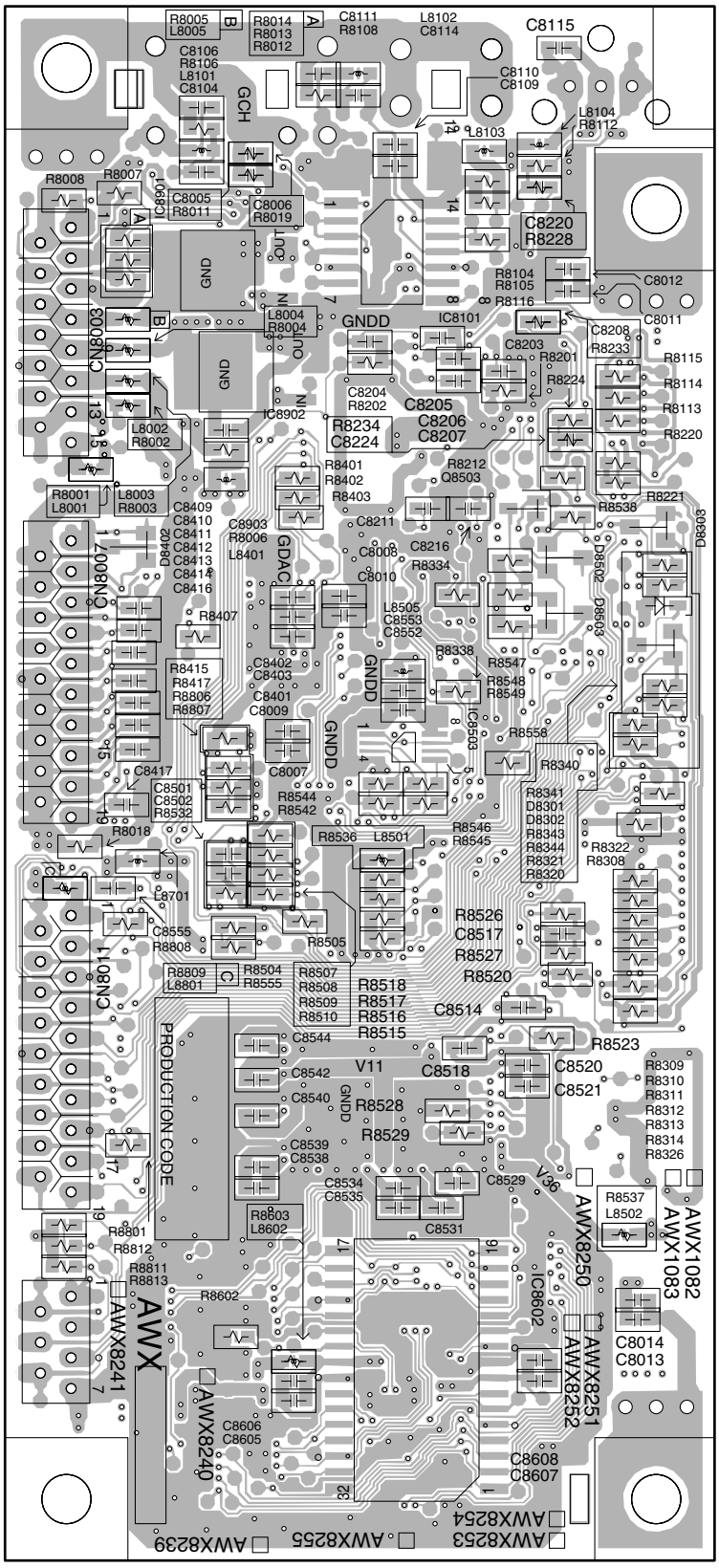



(ANP2022-B)

SIDE B

SIDE B

# C DSP ASSY




(ANP2022-B)

C

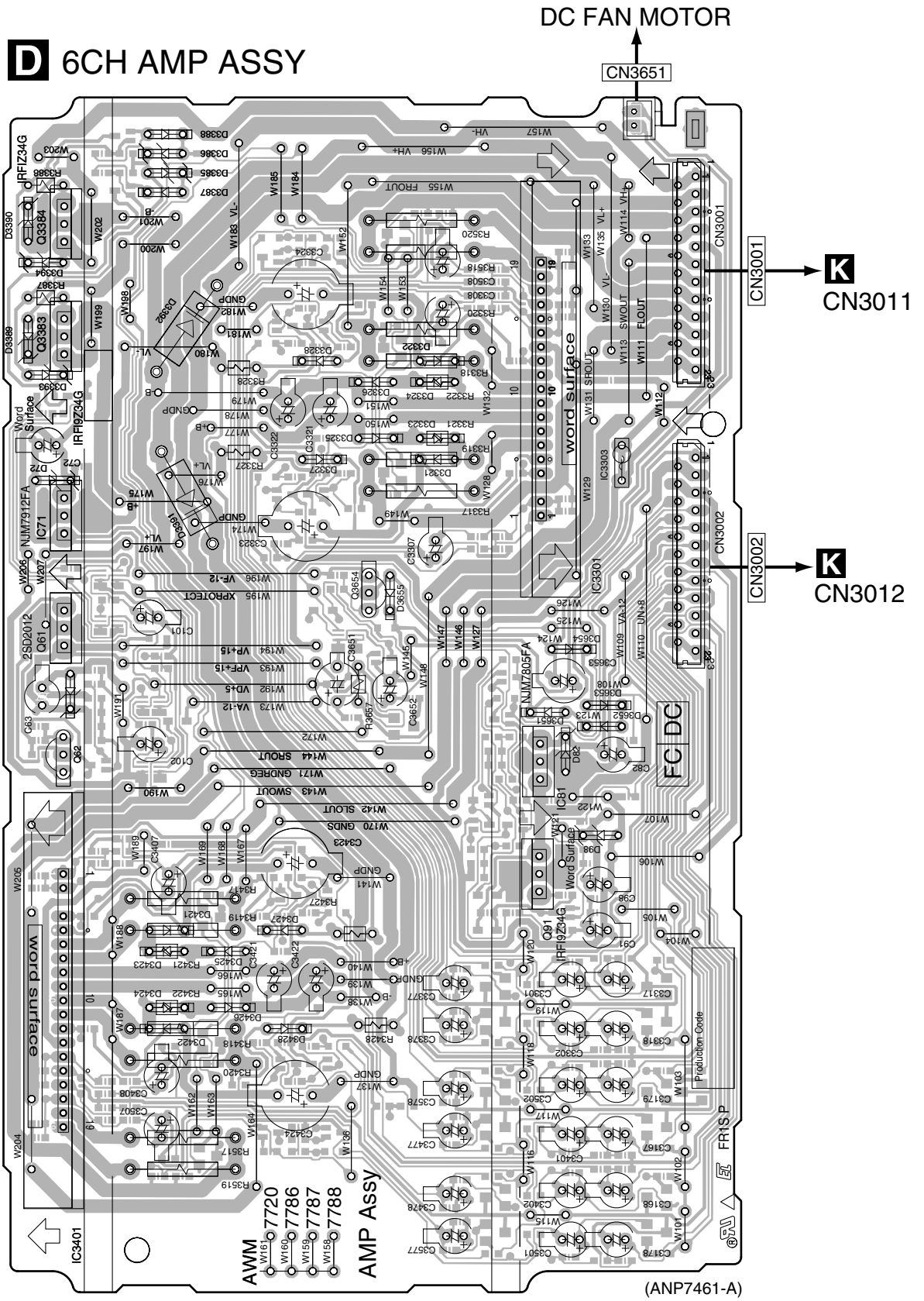
C



5 6 7 8

## 4.4 6CH AMP ASSY

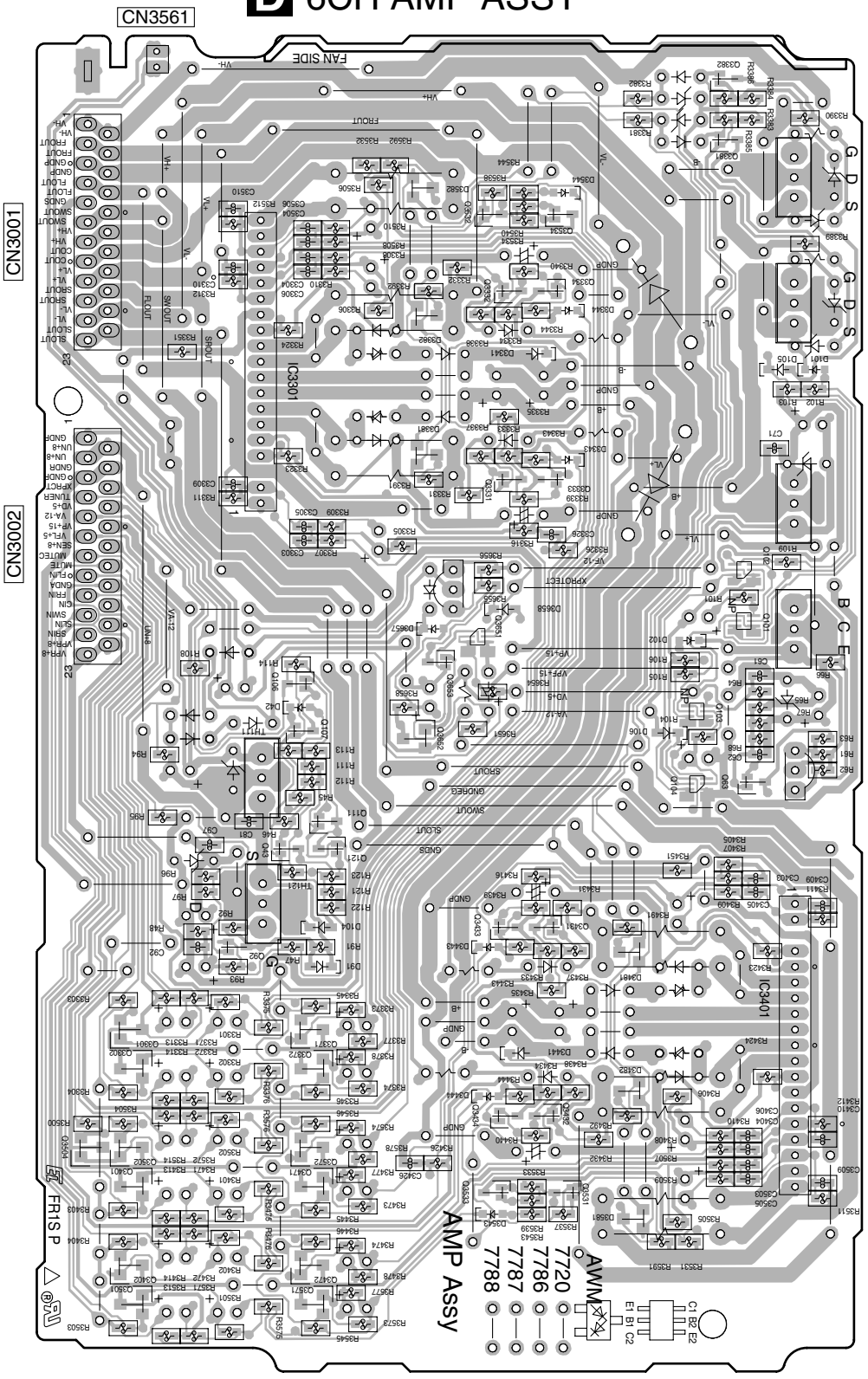
**SIDE A** **SIDE A**



SIDE B

SIDE B

# D 6CH AMP ASSY



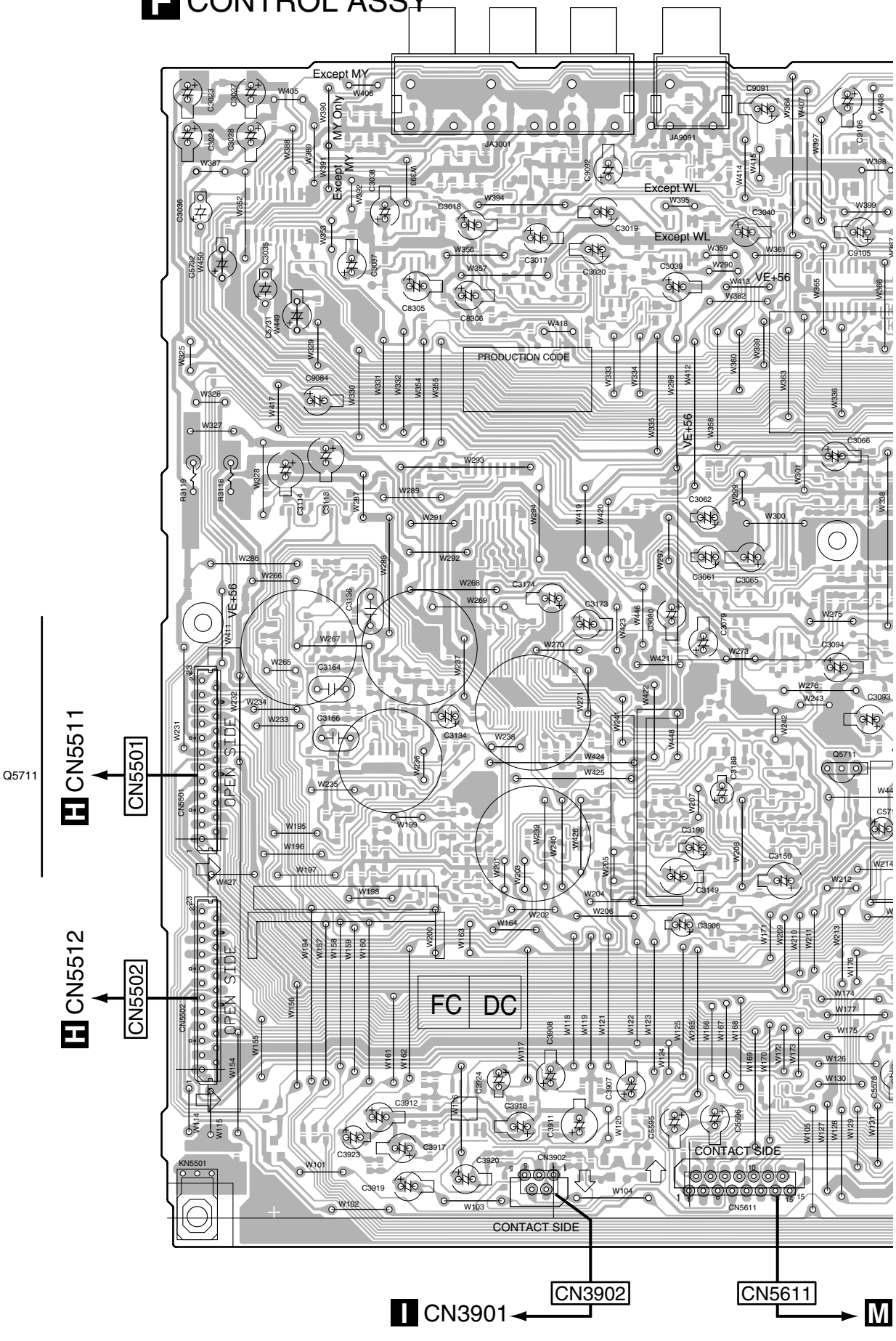

(ANP7461-A)

Q3382
Q3381
Q3532 Q3534
Q3332 Q3334
IC3301
Q3331 Q3333
Q102
Q3651
Q101
Q3653
Q106 Q103
Q107 Q3652
Q104 Q63
Q111
Q43 Q121
Q3433 Q3431
Q92 Q92
IC3401
Q3301 Q3371
Q3302 Q3372
Q3434 Q3432
Q3504 Q3502 Q3572
Q3401 Q3471
Q3533 Q3531
Q3402 Q3472
Q3501 Q3571

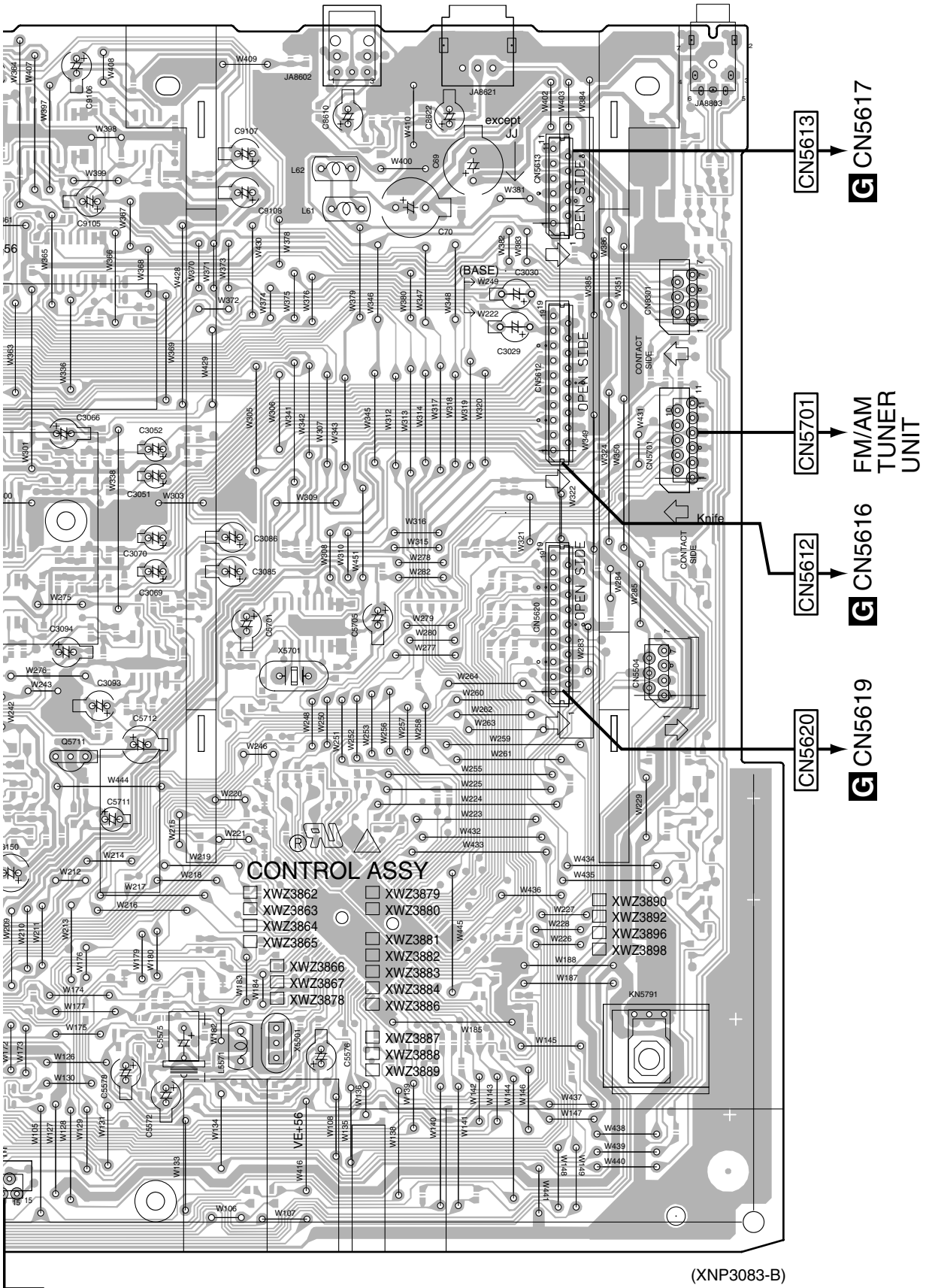
# 4.5 CONTROL ASSY

**SIDE A**

**F** CONTROL ASSY

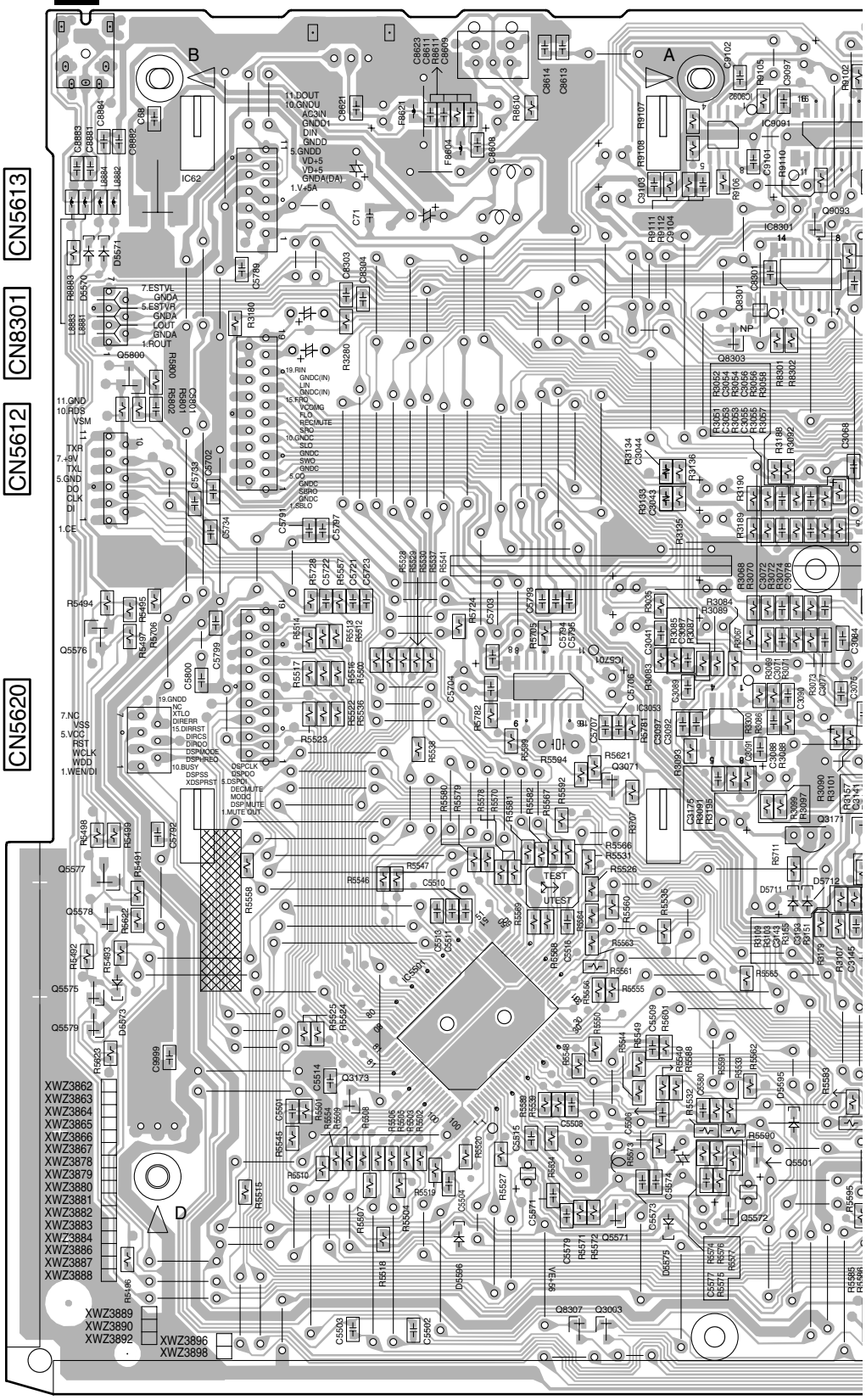


**SIDE A**

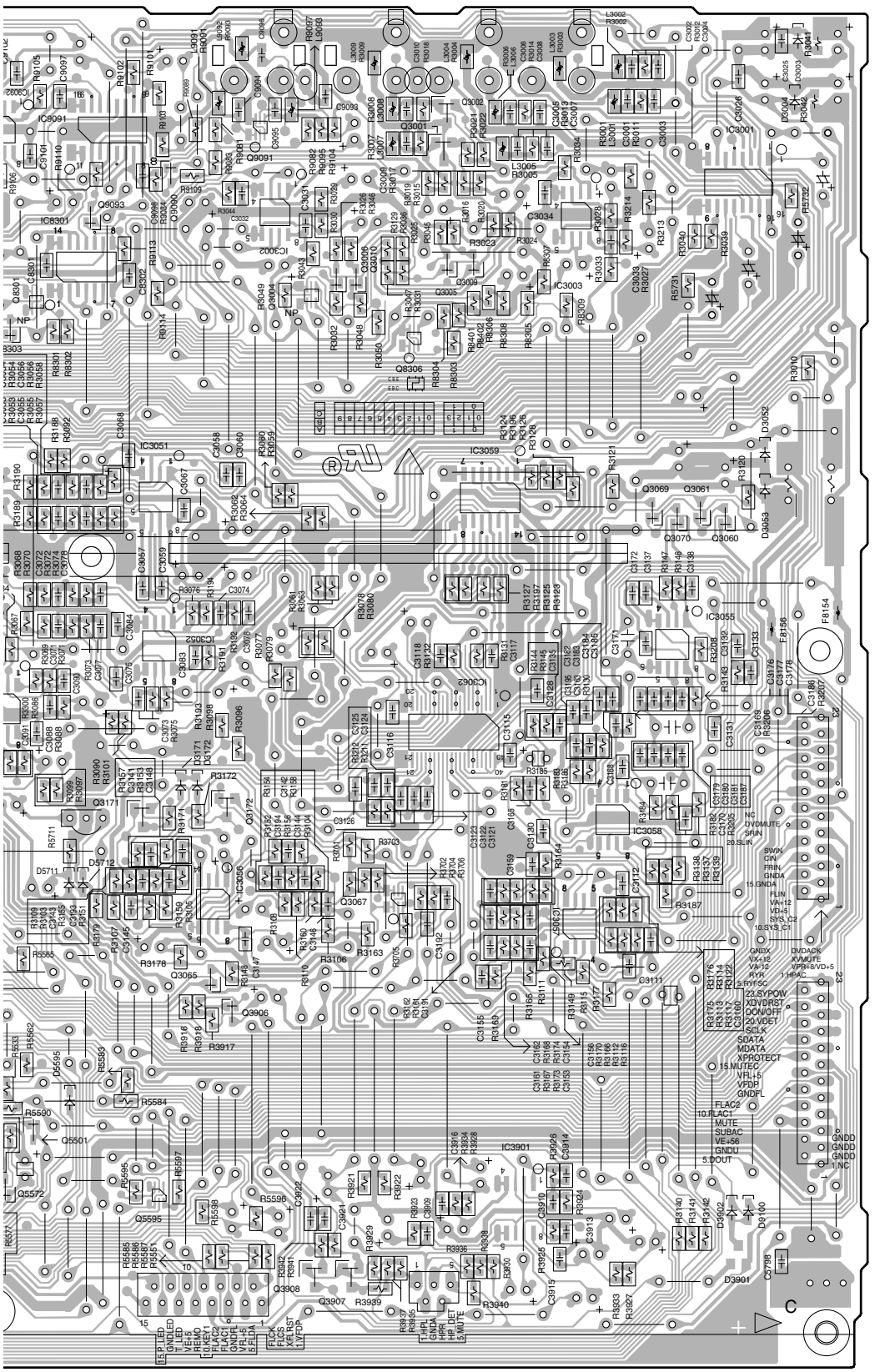

CONTROL ASSY
XWZ3862
XWZ3863
XWZ3864
XWZ3865
XWZ3866
XWZ3867
XWZ3878
XWZ3879
XWZ3880
XWZ3881
XWZ3882
XWZ3883
XWZ3884
XWZ3886
XWZ3887
XWZ3888
XWZ3889
XWZ3890
XWZ3892
XWZ3896
XWZ3898
except JJ
(BASE)
OPEN SIDE
CONTACT SIDE
Knife
VE+56
CN5613
CN5617
CN5701
FM/AM TUNER UNIT
CN5612
CN5616
CN5620
CN5619
(XNP3083-B)
CN5601

**SIDE B**

# F CONTROL ASSY



**SIDE B**




CN5611 CN3902

(XNP3083-B)

IC9092 Q3002
IC9091 Q3001
IC3001 Q9091
IC62 Q9093
IC8301 Q9090
IC3002 Q3006 Q3010
IC3003 Q3005 Q3009
Q8301 Q3004
Q5800 Q8303 Q8306
IC3051 IC3059 Q3069 Q3061
Q3070 Q3060
IC3055 IC3052 IC5701 Q5576
IC3062 IC3053 Q3071
Q3171 Q3172
IC3058 Q5577
Q5578
IC3056 IC3057 Q3067
IC5501 Q5575 Q3065
Q5579 Q3906
Q3173
IC3901 Q5501
Q5572 Q5571 Q5595
Q8307 Q3003 Q3908 Q3907



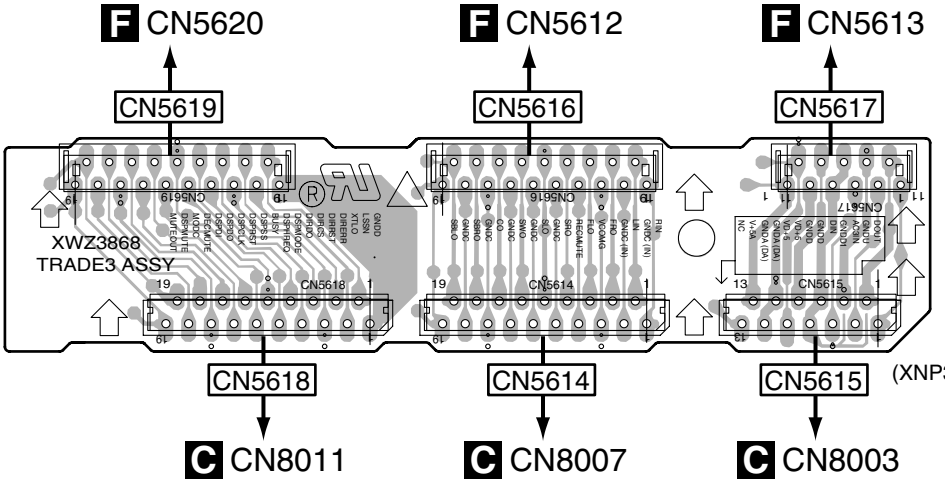
5 6 7 8

## 4.6 TRADE2,TRADE3 and HP ASSYS

SIDE A

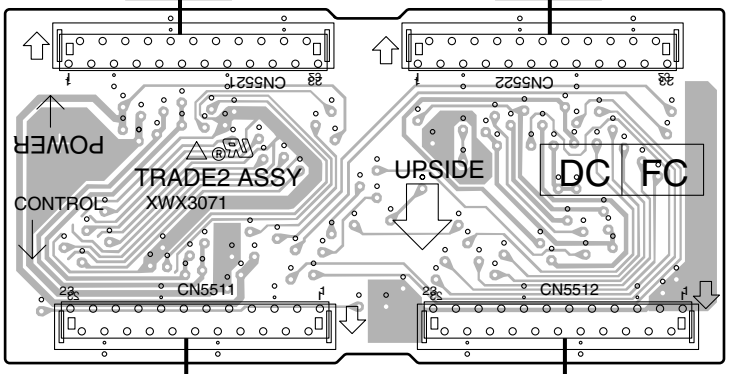
SIDE A

### G TRADE 3 ASSY



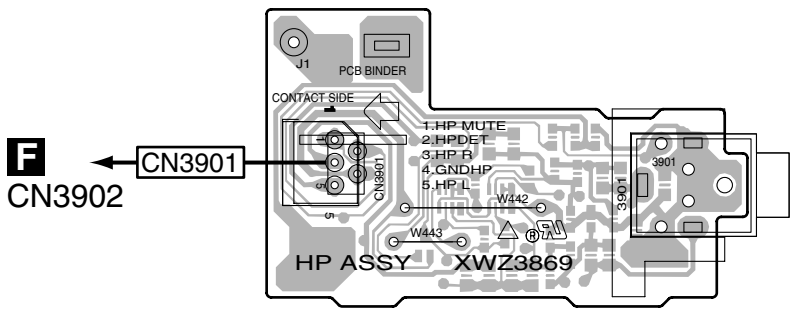

(XNP3083-B)

### H TRADE 2 ASSY




(XNP3070-B)

### I HP ASSY




(XNP3083-B)

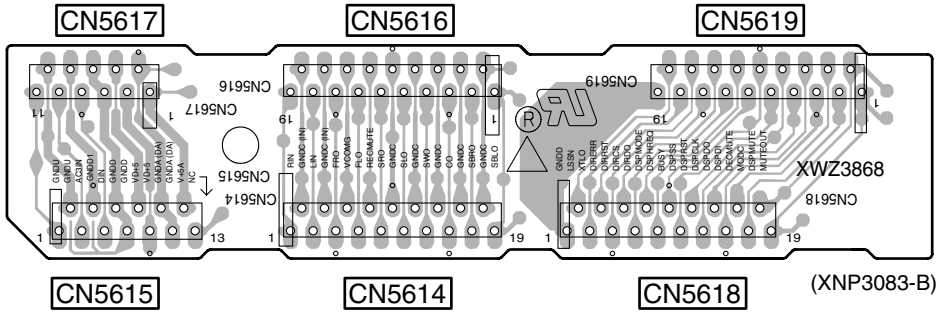
G H I

G H I

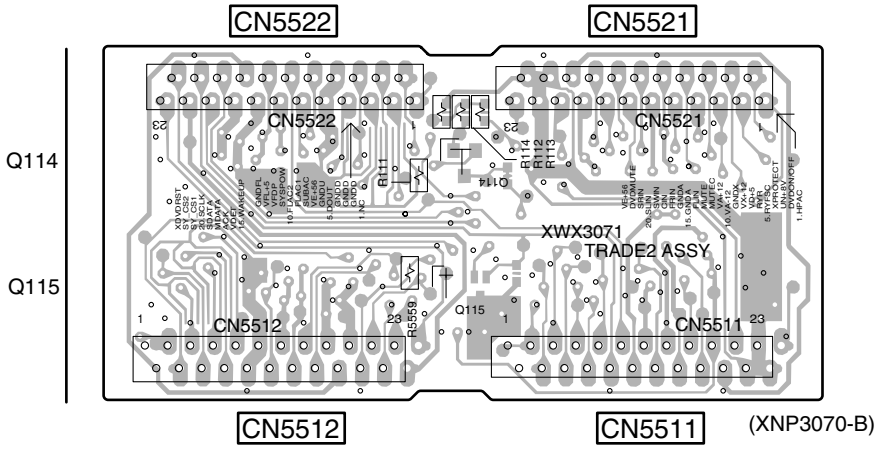
SIDE B

SIDE B

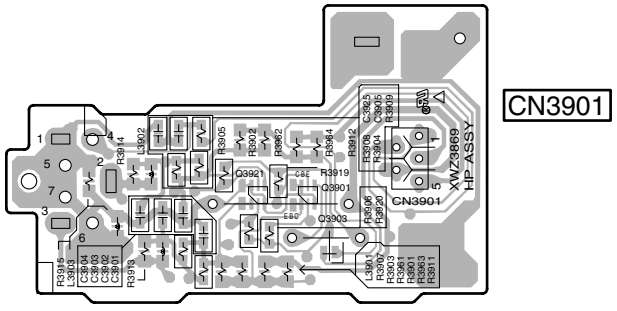
## G TRADE 3 ASSY




## H TRADE 2 ASSY



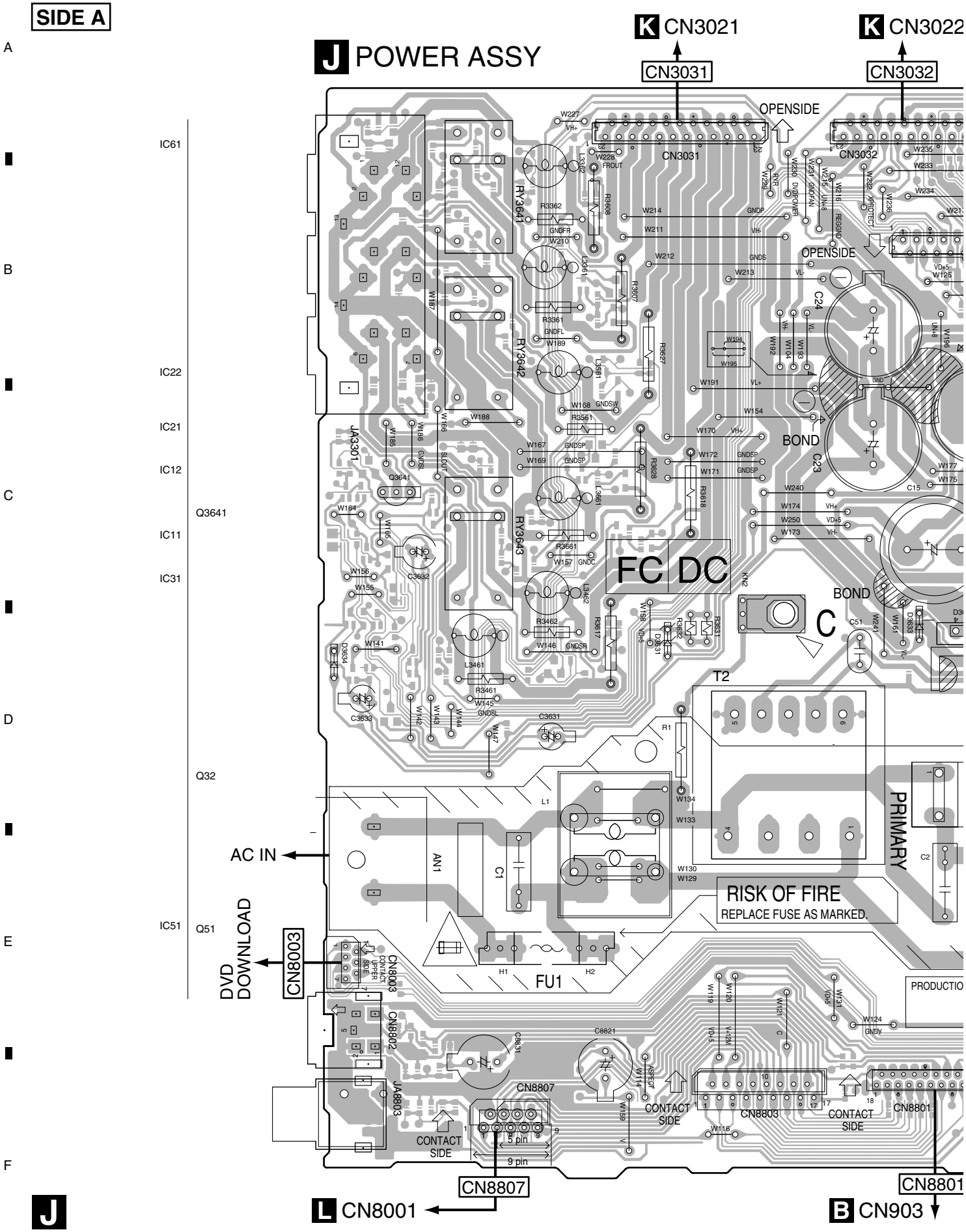

## I HP ASSY



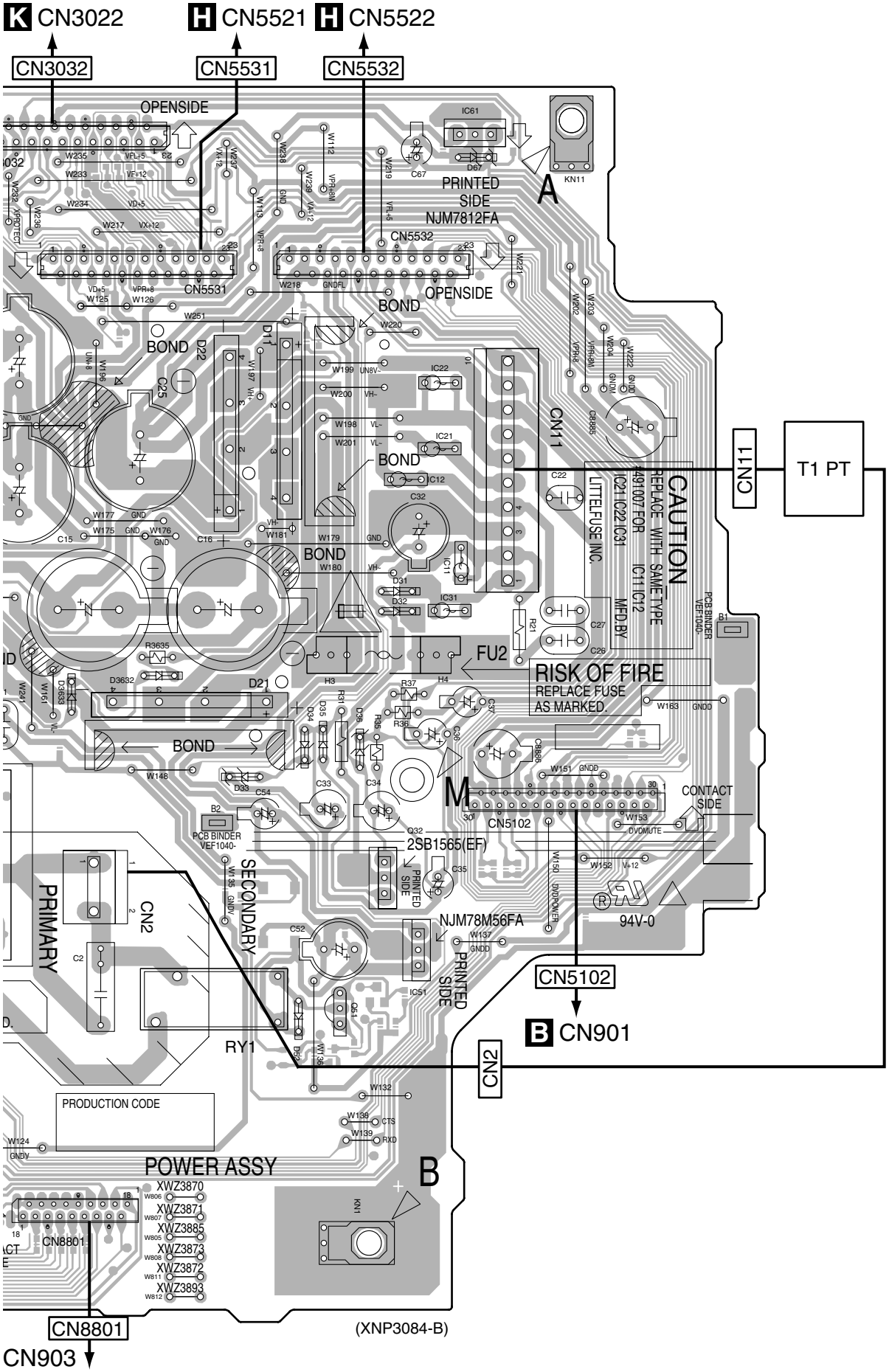

Q3921 Q3903
Q3922
Q3901 Q3902

# 4.7 POWER ASSY

**SIDE A**

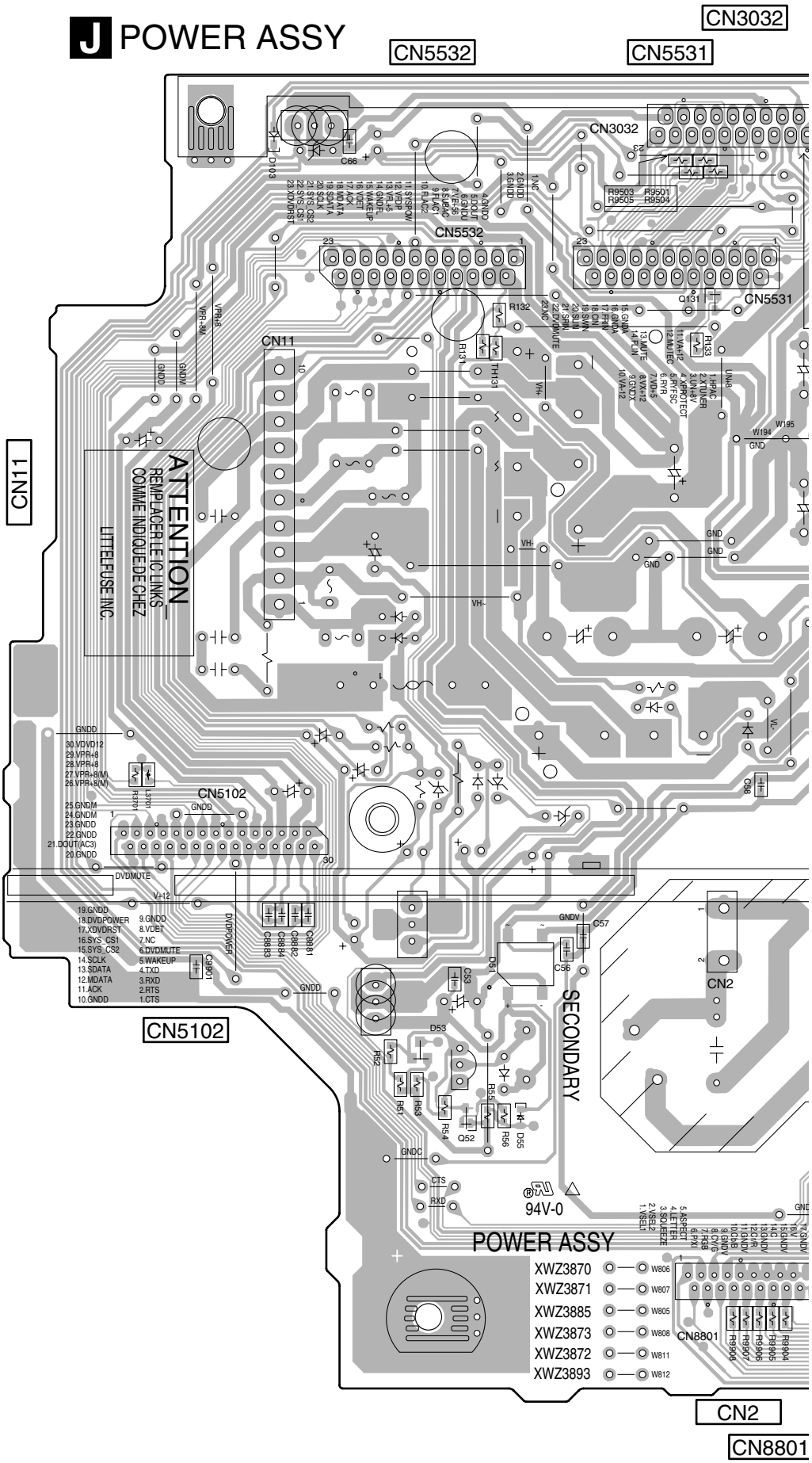


SIDE A

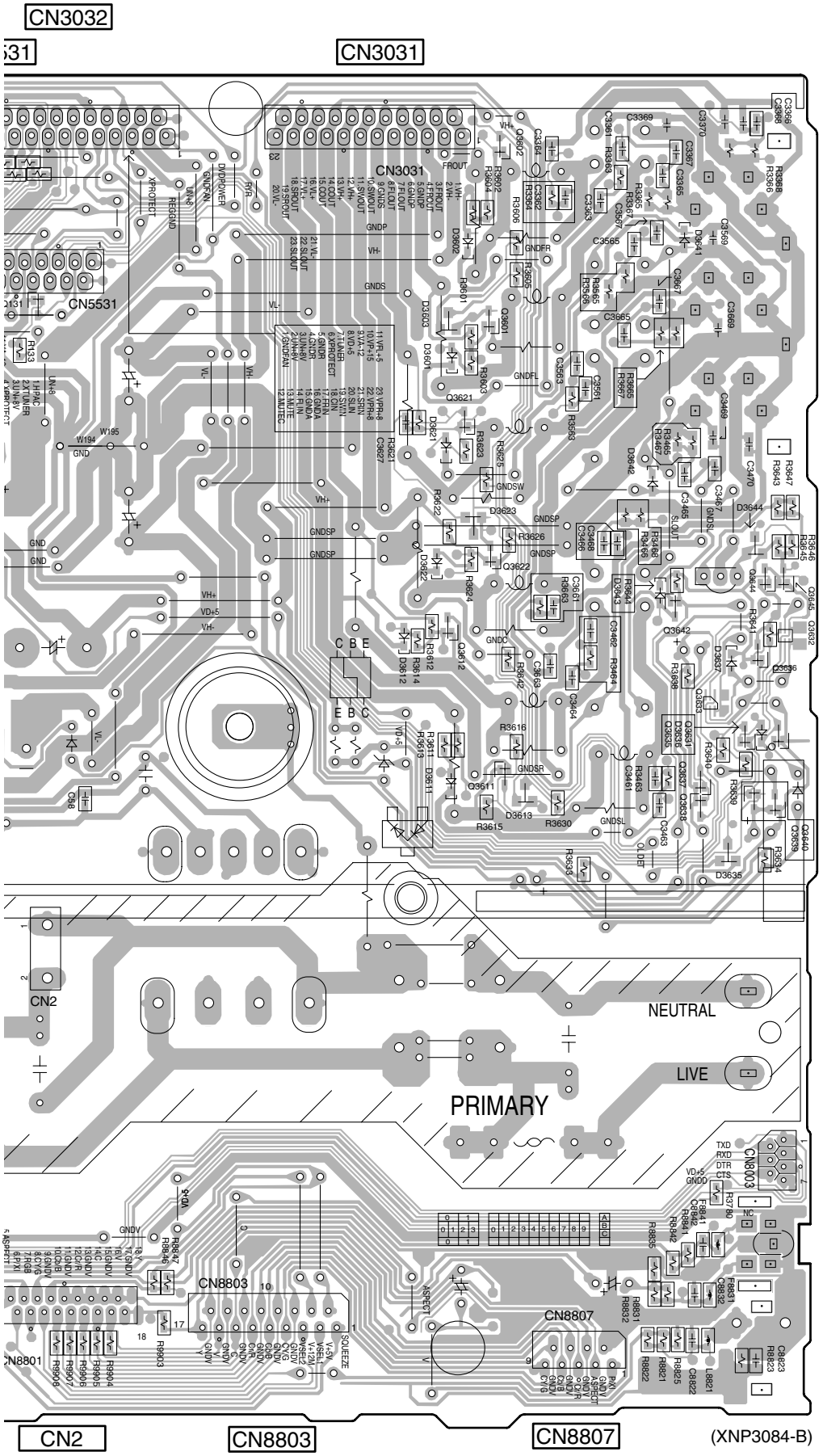

K CN3022
H CN5521
H CN5522
CN3032
CN5531
CN5532
OPENSIDE
PRINTED SIDE NJM7812FA
A
KN11
IC61
D67
C67
CN5532
CN5531
OPENSIDE
BOND
CN11
T1 PT
CAUTION
REPLACE WITH SAME TYPE
491007 FOR IC11 IC12 IC21 IC22 IC31
MFD.BY LITTELFUSE INC.
PCB BINDER VEF1040-
RISK OF FIRE
REPLACE FUSE AS MARKED.
FU2
CONTACT SIDE
CN5102
2SB1565(EF)
NJM78M56FA
94V-0
PRIMARY
SECONDARY
CN2
RY1
B CN901
PRODUCTION CODE
POWER ASSY
B
XWZ3870
XWZ3871
XWZ3885
XWZ3873
XWZ3872
XWZ3893
CN8801
CN903
(XNP3084-B)

**SIDE B**

# J POWER ASSY



**SIDE B**




IC301 Q3602

IC401

Q131 Q3601

Q3621

Q101 Q102

Q3622 Q3644
Q3645

Q202 Q3632
Q201 Q3612 Q3642

Q3636

Q3633

Q3635 Q3631

Q3637

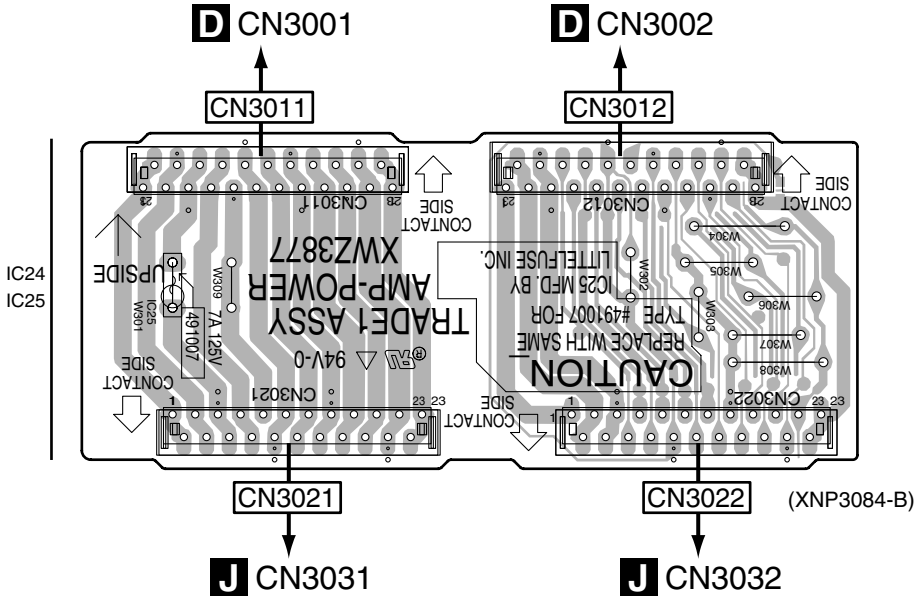
Q3611 Q3638

Q3639 Q3640

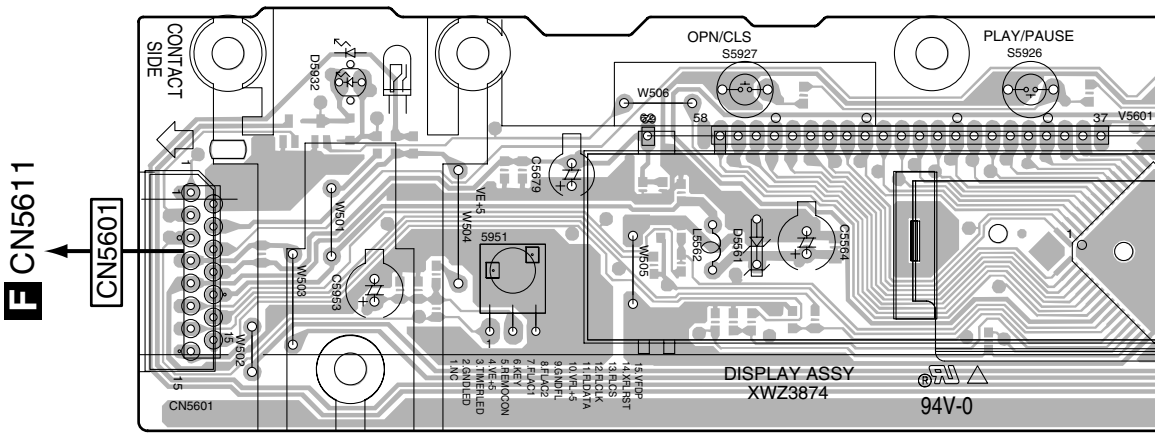
## 4.8 TRADE1, VIDEO and DISPLAY ASSYS

**SIDE A**

**K** TRADE 1 ASSY



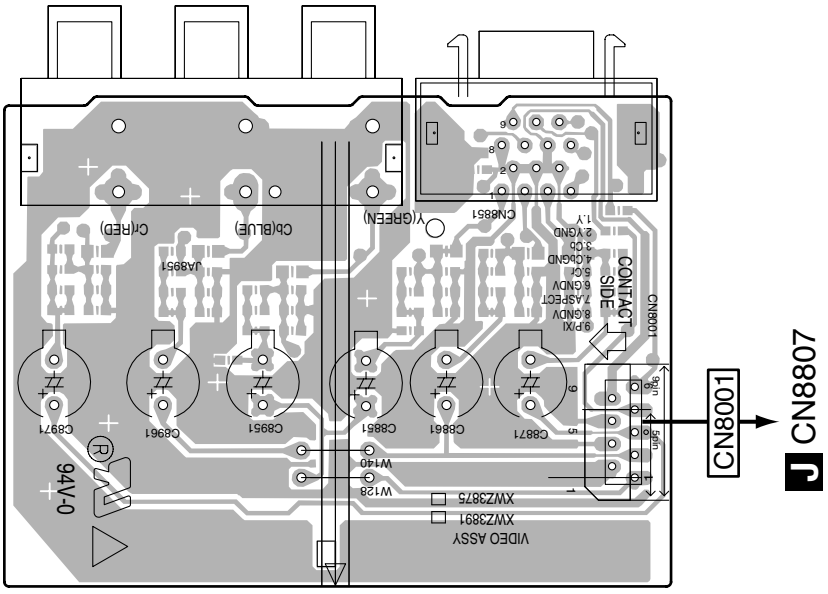

**M** DISPLAY ASSY



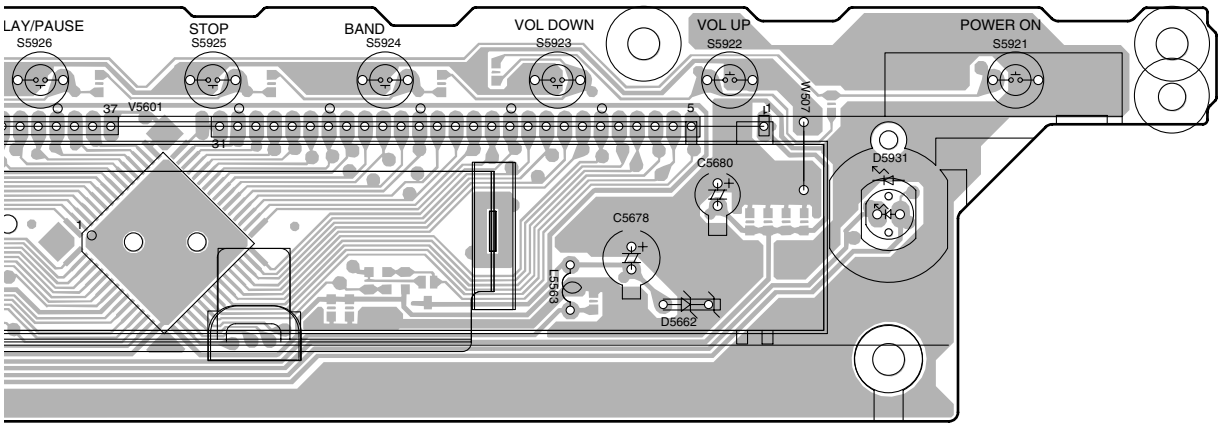

**K M**

SIDE A

## L VIDEO ASSY



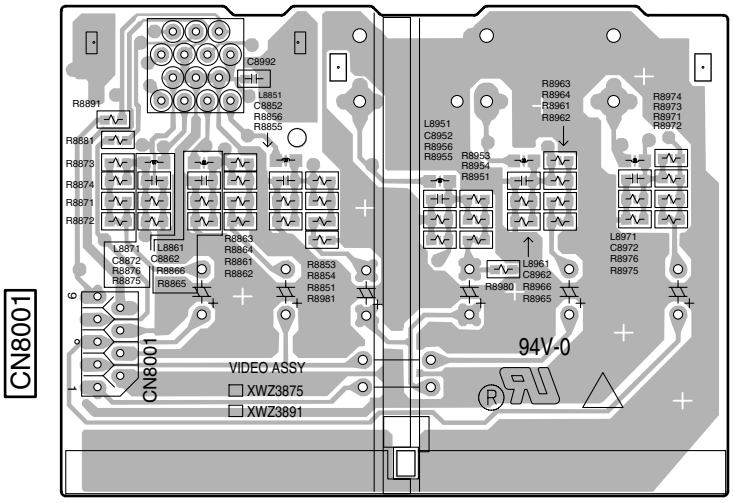

(XNP3084-B)




(XNP3084-B)

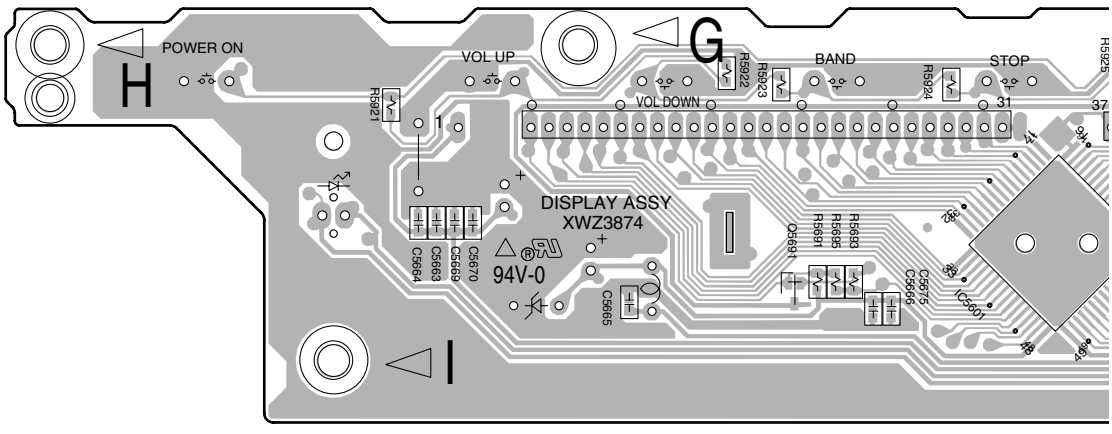
**SIDE B**

## L VIDEO ASSY




(XNP3084-B)

## M DISPLAY ASSY



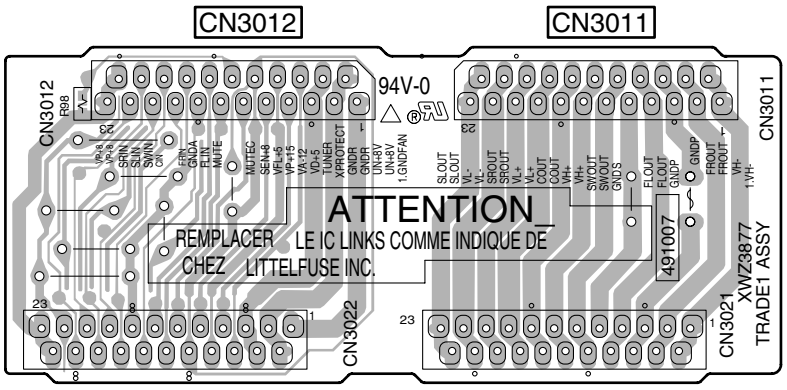

Q5691 IC5601

L M

**SIDE B**

A

# K TRADE 1 ASSY




(XNP3084-B)

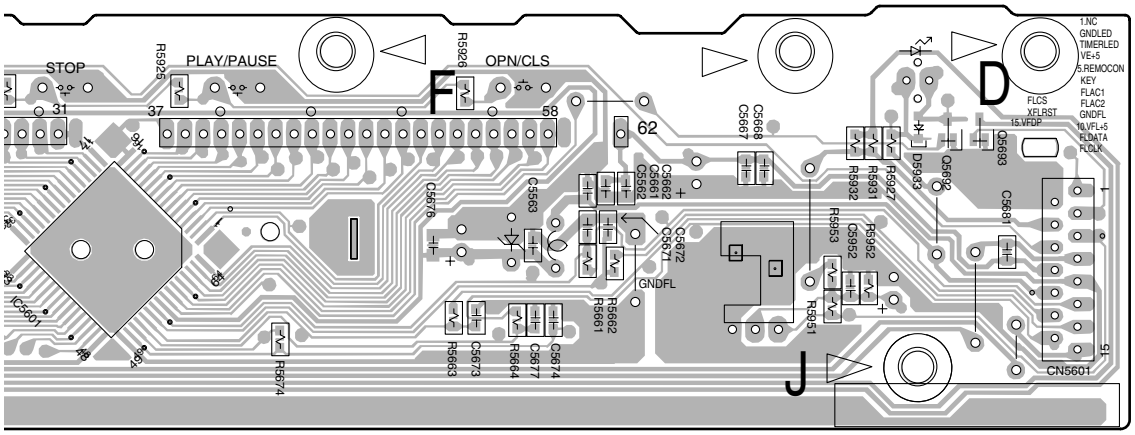
IC24 IC25

B

C

D

E




(XNP3084-B)

IC5601 Q5692 Q5693

F

# 5. PCB PARTS LIST

*NOTES:* ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*

● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

*Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).*

*560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J*

*47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J*

*0.5 Ω → R50 ..... RN2H R 5 0 K*

*1 Ω → 1R0 ..... RS1P 1 R 0 K*

*Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).*

*5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F*

## LIST OF ASSEMBLIES

| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 1 | ..DVD ASSY | AXA7131 |
| | 2 | ..DVDM ASSY | AWM7878 |
| NSP | 2 | ..LOADING MECHA. ASSY | VWT1213 |
| | 3 | ..LOAB ASSY | VWG2346 |
| | 1 | ..DSP ASSY | AWX8526 |
| NSP | 1 | ..AMP MODULE 6CH | AXQ7254 |
| | 2 | ..6CH AMP ASSY | AZW7283 |
| | 1 | ..FM/AM TUNER UNUT | AXX7172 |
| NSP | 1 | ..MAIN ASSY (XV-DV740) | XWM3253 |
| NSP | 1 | ..MAIN ASSY (XV-DV440) | XWM3265 |
| | 2 | ..CONTROL ASSY (XV-DV740) | XWZ3882 |
| | 2 | ..CONTROL ASSY (XV-DV440) | XWZ3896 |
| | 2 | ..TRADE 3 ASSY | XWZ3868 |
| | 2 | ..HP ASSY | XWZ3869 |
| | 1 | ..TRADE 2 ASSY | XWX3071 |
| NSP | 1 | ..COMPLEX ASSY | XWM3256 |
| | 2 | ..POWER ASSY | XWZ3885 |
| | 2 | ..DISPLAY ASSY | XWZ3874 |
| | 2 | ..VIDEO ASSY | XWZ3875 |
| | 2 | ..TRADE 1 ASSY | XWZ3877 |

## CONTRAST OF PCB ASSEMBLIES

### F CONTROL ASSY

XWZ3882 and XWZ3896 are constructed the same except for the following:

| Mark | Symbol and Description | XWZ3882 | XWZ3896 |
|---|---|---|---|
| | C3141, C3142 | CKSRYB223K50 | CKSRYB183K25 |
| | R3107, R3108 | RS1/16S432J | RS1/16S562J |
| | R3155, R3156 | RS1/16S471J | RS1/16S122J |
| | R3157, R3158 | RS1/16S562J | RS1/16S362J |

## PARTS LIST FOR XV-DV740

### A LOAB ASSY

#### SWITCHES AND RELAYS

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | S101 | | VSK1011 |

#### OTHERS

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | CN602 | KR CONNECTOR | S2B-PH-K |
| | CN601 | KR CONNECTOR | S5B-PH-K |

### B DVDM ASSY

#### SEMICONDUCTORS

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | IC602 | | HY57V641620HGT-H |
| | IC101 | | M63018FP |
| ⚠ | IC431 | | MM1565AF |
| | IC501 | | MM1623BF |
| ⚠ | IC421 | | PQ018EH01ZP |
| ⚠ | IC411 | | PQ018EZ01ZP |
| ⚠ | IC441 | | PQ20WZ11 |
| ⚠ | IC401 | | R1224N102H |
| | IC601 | | STM5589CVS |
| | IC301 | | STM6316ATPAZ |
| | IC911 | | TC74VHC08FT |
| | IC901 | | TC74VHCT125AFT |
| | IC604 | | TC7WU04FU |
| | IC603 | | VYW2193 |
| | Q390 | | 2SA1576A |
| ⚠ | Q451 | | 2SA1576A |
| | Q923, Q924, Q926 | | 2SA1576A |
| | Q202, Q212, Q452 | | 2SC4081 |
| | Q921 | | DTA124EUA |
| | Q951 | | DTC114TUA |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | Q724, Q977 | | DTC114YUA |
| | Q922, Q925 | | DTC124EUA |
| | Q201, Q211 | | HN1A01F |
| | Q911 | | RN1903 |
| | Q603 | | RN4982 |
| ⚠ | Q401 | | RSQ035P03 |
| | D431, D432 | | 1SR154-400 |
| | D402, D403, D922–D927 | | 1SS355 |
| | D603 | | RB501V-40 |
| | D401 | | RSX201L-30 |
| | D921 | | UDZS4.7B |

**COILS AND FILTERS**

| | | |
|---|---|---|
| L401 | POWER INDUCTOR | ATH7011 |
| L402 | INDUCTOR | CTH1254 |
| L390 | | LCYA2R7J2520 |

**CAPACITORS**

| | | |
|---|---|---|
| C408 | | CCSRCH121J50 |
| C390 | | CCSRCH180J50 |
| C142 | | CCSRCH221J50 |
| C200 | | CCSRCH331J50 |
| C690 | | CCSRCH470J50 |
| C392 | | CCSRCH560J50 |
| C393, C640, C644 | | CCSRCH7R0D50 |
| C452 | | CEVW100M16 |
| C101, C401, C404, C410, C412 | | CEVW101M16 |
| C422, C443, C561, C564, C600 | | CEVW101M16 |
| C621, C660 | | CEVW101M16 |
| C415, C425 | | CEVW101M4 |
| C201, C211 | | CEVW470M16 |
| C406 | | CKSQYB104K25 |
| C431 | | CKSQYB105K16 |
| C433 | | CKSQYB225K10 |
| C127, C128, C381, C562, C563 | | CKSRYB102K50 |
| C624 | | CKSRYB102K50 |
| C112–C114, C124, C125, C130 | | CKSRYB103K50 |
| C133, C134, C355 | | CKSRYB103K50 |
| C102, C132, C139, C230 | | CKSRYB104K16 |
| C232, C233, C300, C307, C309 | | CKSRYB104K16 |
| C315, C318, C323, C326, C335 | | CKSRYB104K16 |
| C342, C348, C357, C362, C373 | | CKSRYB104K16 |
| C377, C388, C391, C413, C414 | | CKSRYB104K16 |
| C423, C424, C441, C442, C451 | | CKSRYB104K16 |
| C511, C531, C551, C565, C571 | | CKSRYB104K16 |
| C604, C607, C614, C619 | | CKSRYB104K16 |
| C622, C623, C626–C632 | | CKSRYB104K16 |
| C636, C637, C641, C647–C649 | | CKSRYB104K16 |
| C659, C664, C671, C681, C684 | | CKSRYB104K16 |
| C694, C698, C902, C912, C921 | | CKSRYB104K16 |
| C501, C521, C541, C603, C620 | | CKSRYB105K10 |
| C625 | | CKSRYB105K10 |
| C394 | | CKSRYB152K50 |
| C126, C346 | | CKSRYB223K50 |
| C202, C205, C212, C215 | | CKSRYB472K50 |
| C402, C403, C405, C409 (10uF/16V) | | DCH1165 |

**RESISTORS**

| | | |
|---|---|---|
| R201 | | RAB4C220J |
| R211 | | RAB4C390J |
| R100, R1011-R1013,R111, R210 | | RS1/10S0R0J |
| R387–R389, R412–R415, R417 | | RS1/10S0R0J |
| R421, R422, R561, R600, R623 | | RS1/10S0R0J |
| R403 | | RS1/10S100J |
| R105, R106, R115–R120 | | RS1/10S4R7J |
| R104, R107 | | RS1/10S6R8J |
| R125, R144, R330, R331, R628 | | RS1/16S1002F |
| R635 | | RS1/16S1002F |
| R301 | | RS1/16S1202F |
| R502, R512, R522, R532, R542 | | RS1/16S1500F |
| R552 | | RS1/16S1500F |
| R408 | | RS1/16S1502F |
| R410 | | RS1/16S1802F |
| R443 | | RS1/16S2001F |
| R409 | | RS1/16S2702F |
| R441 | | RS1/16S4701F |
| R101, R102, R123, R142, R143 | | RS1/16S5600F |
| R442 | | RS1/16S6801F |
| R411 | | RS1/8S0R0J |
| Other Resistors | | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| CN104 | 4P CONNECTOR | AKN7035 |
| CN105 | 12P FFC CONNECTOR | RKN1053 |
| CN103 | PH CONNECTOR | S5B-PH-SM3 |
| | FLEXIBLE CABLE 7P | VDA1681 |
| CN903 | 18P FFC CONNECTOR | VKN1310 |
| CN901 | 30P FFC CONNECTOR | VKN1322 |
| CN101 | 0.5-24P CONNECTOR | VKN1482 |
| X601 | CRYSTAL RESONATOR (27MHz) | VSS1172 |
| X301 | CHIP CERAMIC RESONATOR (20MHz) | VSS1186 |

## C DSP ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| IC8201 | | AK4114VQ |
| IC8401 | | AK4628VQE |
| IC8501 | | DSPD56367PV150 |
| IC8901 | | NJM2391DL1-33 |
| IC8902 | | NJU7223DL1-18 |
| IC8701 | | TC74LVX244FT |
| IC8702 | | TC74VHCT244AFT |
| IC8502 | | TC7WU04FU |
| Q8504 | | UMD2N |
| Q8503 | | UN5112 |
| D8501 | | 1SS355 |
| D8401 | | DAN202K |
| D8402,D8502,D8503 | | DAP202K |

**COILS AND FILTERS**

| | | |
|---|---|---|
| L8002,L8004,L8501,L8502 | CHIP FERRITE BEAD | ATL7002 |
| L8201,L8203,L8204,L8401,L8402 | | QTL1013 |
| L8504,L8701,L8702 | CHIP SOLID INDUCTOR | QTL1013 |

**CAPACITORS**

| | | |
|---|---|---|
| C8209,C8210 | | CCSRCH100D50 |
| C8421 | | CCSRCH101J50 |
| C8007,C8008,C8201,C8212,C8214 | | CCSRCH471J50 |
| C8404,C8409-C8414,C8416,C8417 | | CCSRCH471J50 |
| C8419,C8505,C8507,C8509 | | CCSRCH471J50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | C8511,C8512,C8515,C8518,C8520 | | CCSRCH471J50 |
| | C8522,C8524,C8526,C8528,C8530 | | CCSRCH471J50 |
| | C8532,C8534,C8536,C8539,C8541 | | CCSRCH471J50 |
| | C8543,C8545,C8551,C8703,C8706 | | CCSRCH471J50 |
| | C8548,C8549 | | CCSRCH8R0D50 |
| | C8701,C8704 | | CEVW100M16 |
| | C8406,C8415,C8546,C8547,C8902 | | CEVW101M16 |
| | C8904 | | CEVW101M16 |
| | C8217,C8225,C8408 | | CEVW470M6R3 |
| | C8204,C8555 | | CKSRYB102K50 |
| | C8009,C8405,C8418,C8517,C8554 | | CKSRYB103K50 |
| | C8010,C8202,C8207,C8213,C8215 | | CKSRYB104K16 |
| | C8407,C8420,C8422,C8504,C8513 | | CKSRYB104K16 |
| | C8521,C8523,C8525,C8527,C8529 | | CKSRYB104K16 |
| | C8531,C8533,C8535,C8537,C8538 | | CKSRYB104K16 |
| | C8540,C8542,C8544,C8550,C8702 | | CKSRYB104K16 |
| | C8705,C8901,C8903 | | CKSRYB104K16 |
| | C8516 | | CKSRYB105K6R3 |
| | C8514 | | CKSRYB333K16 |
| | C8203 | | CKSRYB473K50 |

**RESISTORS**

| | | |
|---|---|---|
| | R8506 | RAB4C101J |
| | R8201 | RS1/16S1802F |
| | Other Resistors | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| | CN8003 13P SOCKET | AKP7070 |
| | CN8007,CN8011 19P SOCKET | AKP7073 |
| | KN8102 WRAPPING TERMINAL | VNF1084 |
| | X8501 CRYSTAL RESONATOR (20MHz) | VSS1171 |
| | X8201 CRYSTAL RESONATOR (24.576MHz) | XSS3003<br>XSS3003 |

## D 6CH AMP ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| ⚠ | IC81 | NJM7805FA |
| ⚠ | IC71 | NJM7912FA |
| ⚠ | IC3301,IC3401 | STK402-270 |
| | Q3382,Q43 | 2SA1576A |
| | Q62 | 2SB1237X |
| | Q111, Q3381,Q63, Q92 | 2SC4081 |
| ⚠ | Q61 | 2SD2012 |
| | Q3301,Q3302,Q3401,Q3402 | 2SD2114K |
| | Q3501,Q3502,Q3504 | 2SD2114K |
| | Q3654 | 2SD2144S |
| | Q107, Q3653 | DTA124EUA |
| | Q3652 | DTA124TK |
| | Q106 | DTC124EUA |
| ⚠ | Q3383,Q91 | IRFI9Z34G |
| ⚠ | Q3384 | IRFIZ34G |
| | Q3651 | RN1901 |
| | Q101, Q103 | UMB1N |
| | Q102, Q104 | UMH1N |
| ⚠ | D3321-D3326 | 1SR139-400 |
| | D3327,D3328 | 1SR139-400 |
| ⚠ | D3421-D3426 | 1SR139-400 |
| | D3427,D3428 | 1SR139-400 |
| | D3387,D3388,D3651-D3655 | 1SS133 |
| | D101, D102, D104, D3657,D42 | 1SS355 |
| ⚠ | D3391,D3392 | 30PDA20-FC6 |
| ⚠ | D3381,D3382,D3481,D3482 | DAN217 |
| ⚠ | D3581,D3582 | DAN217 |
| | D3389,D3390 | MTZJ10C |
| ⚠ | D98 | MTZJ11B |
| ⚠ | D72 | MTZJ15C |
| | D3393,D3394 | MTZJ18B |
| ⚠ | D63 | MTZJ18C |
| | D3385,D3386 | MTZJ36A |
| ⚠ | D82 | MTZJ7.5C |
| | D91 | UDZS18B |
| | D105, D106, D3658 | UDZS7.5B |
| | TH111 | NCP18WF104J03RB |

**CAPACITORS**

| | | |
|---|---|---|
| | C3305,C3306,C3405,C3406 | CCSRCH221J50 |
| | C3505,C3506,C62, C97 | CCSRCH221J50 |
| | C3309,C3310,C3409,C3410 | CCSRCJ3R0C50 |
| | C3509,C3510 | CCSRCJ3R0C50 |
| | C3307,C3308,C3407,C3408,C3508 | CEAL100M16 |
| | C3507 | CEAL470M6R3 |
| | C72 | CEAT100M50 |
| | C3651 | CEAT101M25 |
| | C101, C102 | CEAT1R0M50 |
| | C3323,C3324,C3423,C3424 | CEAT221M50 |
| | C3167,C3168,C3178,C3179 | CEAT2R2M50 |
| | C3301,C3302,C3317,C3318 | CEAT2R2M50 |
| | C3401,C3402,C3501,C3502 | CEAT2R2M50 |
| | C3652,C63, C82, C98 | CEAT470M25 |
| | C3653 | CEAT470M35 |
| | C3303,C3304,C3403,C3404 | CKSRYB102K50 |
| | C3503,C3504 | CKSRYB102K50 |
| | C92 | CKSRYB104K16 |
| | C71, C81 | CKSRYB473K50 |

**RESISTORS**

| | | |
|---|---|---|
| | R3317-R3320,R3417-R3420 | ACN7122 |
| | R3517-R3520 (0.22/2W) | ACN7122 |
| ⚠ | R3327,R3328,R3427,R3428 | RD1/4MUF470J |
| | R3387,R3388 | RD1/4PU101J |
| | R3657 | RD1/4PU330J |
| | R96, R97 | RS1/16S1002F |
| ⚠ | R3323,R3324,R3351,R3423,R3424 | RS1/16S1R0J |
| ⚠ | R3451 | RS1/16S1R0J |
| | R67, R68 | RS1/16S2201F |
| | R94, R95 | RS1/16S2701F |
| ⚠ | R62 | RS1/16S330J |
| | R65 | RS1/16S4700F |
| | R47, R48 | RS1/16S4701F |
| | Other Resistors | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| | CN3001,CN3002 23P PLUG | AKP7064 |
| | CN3651 2P PLUG | KM200SA2 |

## F CONTROL ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | IC3003,IC3051-IC3053,IC3055-IC3058 | BA4558F-HT |
| | IC3062 | BD3814FV |
| | IC3901 | NJM4565M |
| | IC5501 | PDC114B |

| Mark No. | Description | Part No. |
|---|---|---|
| IC3001 | | TC4052BFN |
| IC3059 | | TC4066BFN |
| Q5576,Q5577 | | 2SA1037K |
| Q3906 | | 2SA1576A |
| Q3005,Q3006,Q3009,Q3010,Q5501 | | 2SC4081 |
| Q5572 | | 2SC4081 |
| Q5711 | | 2SD1858X |
| Q3001,Q3002 | | 2SD2114K |
| Q3003,Q3061,Q3069,Q3071 | | DTA124EUA |
| Q3060,Q3070,Q5575,Q5578,Q5579 | | DTC124EUA |
| Q5571 | | DTC143EUA |
| Q5595 | | RN2901 |
| Q3004 | | UMB1N |
| D3901 | | DAP202K |
| D5570,D5571,D5573,D5575 | | MA111 |
| D5595,D5596,D5712 | | MA111 |
| D5711 | | UDZS10B |
| D3003,D3004 | | UDZS6.2B |
| D3052,D3053 | | UDZS6.8B |

**COILS AND FILTERS**

| | |
|---|---|
| L5571 | LFEA220J |
| L8881-L8884 CHIP SOLID INDUCTOR | QTL1013 |
| F8604 CHIP SOLID INDUCTOR | VTF1096 |

**CAPACITORS**

| | |
|---|---|
| C5575 (0.047F/5.5V) | ACH1246 |
| C3111,C3112,C3130,C3145,C3146 | CCSRCH100D50 |
| C3131-C3133,C3913,C3914 | CCSRCH101J50 |
| C5510,C5511,C5577,C5722,C5723 | CCSRCH101J50 |
| C3001-C3008 | CCSRCH221J50 |
| C3053,C3054 | CCSRCH331J50 |
| C3041,C3168,C3909,C3910 | CCSRCH470J50 |
| C3059,C3060 | CCSRCH680J50 |
| C3009,C3010,C3055,C3056 | CCSRCH821J50 |
| C3077,C3078,C3089 | CCSRCH821J50 |
| C3134,C3189,C3190,C3906,C5711 | CEAL100M16 |
| C3149,C3150 | CEAL470M16 |
| C3017-C3020,C3037,C3038 | CEAT100M50 |
| C3079,C3080,C3085,C3086 | CEAT100M50 |
| C3093,C3094,C3173,C3174 | CEAT100M50 |
| C3917,C3918,C5576 | CEAT100M50 |
| C5572 | CEAT101M10 |
| C5578 | CEAT1R0M50 |
| C3113,C3114 | CEAT221M10 |
| C3027,C3028,C3911,C3912 | CEAT470M16 |
| C3919,C3920,C8610 | CEAT470M16 |
| C3051,C3052,C3061,C3062 | CEJQ100M16 |
| C3069,C3070 | CEJQ100M16 |
| C3035,C3036 | CEJQ100M35 |
| C5595,C5596 | CEJQ220M25 |
| C3065,C3066 | CEJQ470M16 |
| C5504,C5789,C5793,C5795 | CKSRYB102K50 |
| C3025,C3026,C3033,C3034 | CKSRYB103K50 |
| C3067,C3068,C3083,C3084 | CKSRYB103K50 |
| C3091,C3092,C3115,C3116 | CKSRYB103K50 |
| C3147,C3148,C3159,C3160 | CKSRYB103K50 |
| C3169-C3172,C5506,C5508,C5571 | CKSRYB103K50 |
| C5573,C5580,C5794,C5798,C5799 | CKSRYB103K50 |
| C3121-C3124,C3180,C3182,C3186 | CKSRYB104K16 |
| C5513-C5516,C5574,C5791,C8609 | CKSRYB104K16 |
| C8611 | CKSRYB104K16 |
| C3176 | CKSRYB123K50 |
| C3071,C3072,C3075,C3076,C3087 | CKSRYB152K50 |
| C3097,C3138,C3155,C3156 | CKSRYB152K50 |
| C3183 | CKSRYB183K25 |
| C3141,C3142 | CKSRYB223K50 |
| C3181 | CKSRYB273K16 |
| C3161,C3162 | CKSRYB332K50 |
| C3165 | CKSRYB393K16 |
| C3125,C3126 | CKSRYB472K50 |
| C3177,C3193,C3194 | CKSRYB473K25 |
| C3179 | CKSRYB563K16 |
| C3090 | CKSRYB682K50 |
| C3195 | CKSRYB683K16 |

**RESISTORS**

| | |
|---|---|
| R3118,R3119 | RD1/2VM151J |
| R3041,R3042 | RS1/10S182J |
| Other Resistors | RS1/16S###J |

**OTHERS**

| | |
|---|---|
| CN3902 5P FFC CONNECTOR | 52045-0545 |
| CN5701 11P FFC CONNECTOR | 52045-1145 |
| CN5611 15P FFC CONNECTOR | 52045-1545 |
| JA3001 6P PIN JACK | AKB7050 |
| CN5613 11P PLUG | AKP7058 |
| CN5612,CN5620 19P PLUG | AKP7062 |
| CN5501,CN5502 23P PLUG | AKP7064 |
| X5501 CERAMIC RESONATOR (10MHz) | ASS7034 |
| JA8602 OPTICAL INPUT JACK | TORX179PL |
| KN5501,KN5791 TERMINAL | VNF1084 |
| JA8803 MINI JACK(4P) /W SW | XKN3015 |

## G TRADE 3 ASSY

**OTHERS**

| | |
|---|---|
| CN5615 13P PLUG | AKP7059 |
| CN5614,CN5618 19P PLUG | AKP7062 |
| CN5617 11P SOCKET | AKP7069 |
| CN5616,CN5619 19P SOCKET | AKP7073 |

## H TRADE 2 ASSY

**SEMICONDUCTORS**

| | |
|---|---|
| Q114 | 2SD2114K |
| Q115 | DTA124EUA |

**RESISTORS**

| | |
|---|---|
| All Resistors | RS1/16S###J |

**OTHERS**

| | |
|---|---|
| CN5511,CN5512,CN5521,CN5522 23P SOCKET | AKP7075 |

## I HP ASSY

**SEMICONDUCTORS**

| | |
|---|---|
| Q3903 | DTA124EUA |
| Q3901,Q3921 | XP4506 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | | **COILS AND FILTERS** | |
| | L3901,L3902 | CHIP BEAD | CTF1399 |
| | | **CAPACITORS** | |
| | C3901,C3902 | | CKSRYB102K50 |
| | C3905 | | CKSRYB103K50 |
| | C3925 | | CKSRYB104K16 |
| | C3903,C3904 | | CKSRYB473K25 |
| | | **RESISTORS** | |
| | R3901,R3902,R3911,R3912 | | RS1/10S680J |
| | R3961-R3964 | | RS1/10S680J |
| | Other Resistors | | RS1/16S###J |
| | | **OTHERS** | |
| | CN3901 | 5P FFC CONNECTOR | 52044-0545 |
| | 3901 | MINI JACK | AKN7003 |
| | | PCB BINDER | VEF1040 |

## J POWER ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | | **SEMICONDUCTORS** | |
| ⚠ | IC61 | | NJM7812FA |
| ⚠ | IC51 | | NJM78M56FA |
| ⚠ | Q32 | | 2SB1565 |
| | Q3601,Q3602,Q3611,Q3612 | | 2SC4081 |
| | Q3621,Q3622,Q3631,Q3637,Q3638 | | 2SC4081 |
| | Q3642,Q3644,Q52 | | 2SC4081 |
| | Q3641,Q51 | | 2SD1858X |
| | Q3635,Q3639 | | DTA124EUA |
| | Q3645 | | DTA143EUA |
| | Q3636,Q3640 | | DTC124EUA |
| | Q3633 | | RN1901 |
| | Q3632 | | UMB1N |
| | D35, D3632-D3634,D52 | | 1SS133 |
| ⚠ | D11, D21, D22 | | D5SBA20 |
| | D3635 | | DAN202K |
| | D3644,D53 | | DAN217 |
| | D3603,D3613,D3623 | | DAP202K |
| ⚠ | D51 | | DF06SA |
| | D103, D3601,D3602,D3611,D3612 | | MA111 |
| | D3621,D3622,D3636,D3637 | | MA111 |
| | D3641-D3643 | | MA111 |
| | D33, D34 | | MTZJ16B |
| | D3631 | | MTZJ5.1A |
| | D36 | | MTZJ6.8B |
| ⚠ | D31, D32 | | S5688G |
| | D55 | | UDZS20B |
| | | **COILS AND FILTERS** | |
| | L3361,L3362,L3461,L3462,L3561 | | ATH-059 |
| | L3661 | AF CHOKE COIL | ATH-059 |
| | L3701 | CHIP BEAD | VTL1075 |
| | L8821 | CHIP BEAD | VTL1086 |
| ⚠ | L1 | LINE FILTER | XTF3004 |
| | | **TRANSFORMERS** | |
| ⚠ | T2 | | ATT7079 |
| | | **SWITCHES AND RELAYS** | |
| | RY3641-RY3643 | | ASR7017 |
| ⚠ | RY1 | | XSR3008 |
| | | **CAPACITORS** | |
| ⚠ | C1, C2 | (0.022/AC275V) | ACE7022 |
| | C25 | | ACH7183 |
| | C3633 | | CEAT100M50 |
| | C52 | | CEAT102M16 |
| | C33, C34, C67 | | CEAT220M50 |
| | C32 | | CEAT221M63 |
| | C3631 | | CEAT2R2M2A |
| | C54 | | CEAT470M16 |
| | C3632 | | CEAT471M6R3 |
| | C35 | | CEJQ100M50 |
| | C53 | | CKSRYB103K50 |
| | C3361-C3364,C3461-C3464,C3561 | | CKSRYB223K50 |
| | C3563,C3661,C3663 | | CKSRYB223K50 |
| | C3365-C3368,C3465-C3468,C3565 | | CKSRYB473K50 |
| | C3567,C3665,C3667,C56–C58 | | CKSRYB473K50 |
| | C66 | | CKSRYB473K50 |
| | C22, C26, C27 | | CQMA472J50 |
| | C3369,C3370,C3469,C3470,C3569 | | XCG3008 |
| | C3669 | (0.01pF/100V) | XCG3008 |
| | C8821,C8831 | (1000uF/6.3V) | XCH3017 |
| | C8885 | | XCH3021 |
| | C23, C24 | (5600uF/35V) | XCH3023 |
| | C15, C16 | (2200uF/63V) | XCH3024 |
| | | **RESISTORS** | |
| | R3607,R3608,R3617,R3618 | | ACN7112 |
| | R3627,R3628 | (0.1/ 2W) | ACN7112 |
| | R1 (2.2M/ 1/2W) | | RCN1080 |
| | R21 | | RD1/2PMF100J |
| | R3361,R3362,R3461,R3462,R3561 | | RD1/2PMF101J |
| | R3661 | | RD1/2PMF101J |
| | R31 | | RD1/2PMF332J |
| | R36, R37 | | RD1/4PU101J |
| | R3635 | | RD1/4PU332J |
| | R3631,R3632 | | RD1/4PU333J |
| | R35 | | RD1/4PU472J |
| | R3365-R3368,R3465-R3468 | | RS1/10S220J |
| | R3565,R3566,R3665,R3667 | | RS1/10S220J |
| | R8831,R8832,R8841,R8842 | | RS1/16S1500F |
| | R8821 | | RS1/16S75R0F |
| | Other Resistors | | RS1/16S###J |
| | | **OTHERS** | |
| | CN8807 | 5P FFC CONNECTOR | 52045-0545 |
| | CN3031,CN3032,CN5531,CN5532 | 23P PLUG | AKP7064 |
| | CN8802 | 4P MINI DIN SOCKET | AKP7179 |
| | H1–H4 | FUSE CLIP | AKR7001 |
| | CN11 | 10P VH CONNECTOR | B10P-VH |
| ⚠ | CN2 | 2P VH CONNECTOR | B2P3-VH |
| | | SCREW | BBZ30P080FTC |
| | | PCB BINDER | VEF1040 |
| | JA8803 | 1P PIN JACK | VKB1122 |
| | CN8801 | 18P FFC CONNECTOR | VKN1249 |
| | CN5102 | 30P FFC CONNECTOR | VKN1261 |
| | CN8003 | 7P FFC CONNECTOR | VKN1267 |
| | KN1, KN2 | WRAPPING TERMINAL | VNF1084 |
| | JA3301 | 6CH SPEAKER JACK | XKE3021 |
| ⚠ | AN1 | AC INLET 1P | XKP3042 |
| | D. HEAT SINK | | XNH3030 |

## K TRADE 1 ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SEMICONDUCTORS** | | | |
| ⚠ | IC25 (7A) | | AEK7021 |
| **RESISTORS** | | | |
| | All Resistors | | RS1/16S###J |
| **OTHERS** | | | |
| | CN3011,CN3012,CN3021,CN3022 | 23P SOCKET | AKP7075 |

## L VIDEO ASSY

| | | |
|---|---|---|
| **COILS AND FILTERS** | | |
| | L8951 CHIP BEADS | VTL1086 |
| | L8961,L8971 CHIP BEADS | VTL1089 |
| **CAPACITORS** | | |
| | C8952,C8962,C8972 | CCSRCH470J50 |
| | C8951 | CEAT102M6R3 |
| | C8961,C8971 | CEAT471M6R3 |
| **RESISTORS** | | |
| | R8953,R8963,R8973 | RS1/16S75R0F |
| **OTHERS** | | |
| | CN8001 5P FFC CONNECTOR | 52045-0545 |
| | JA8951 3P PIN JACK | VKB1150 |

## M DISPLAY ASSY

| | | |
|---|---|---|
| **SEMICONDUCTORS** | | |
| | IC5601 | PT6302LQ-003 |
| | Q5691 | 2SC4081 |
| | Q5692,Q5693 | DTC143EUA |
| | D5932 | E1L33-AB0A2-02 |
| | D5662 | MTZJ36B |
| | D5931 | SLR-56MC |
| | D5933 | UDZS6.8B |
| **COILS AND FILTERS** | | |
| | L5563 | LAU100J |
| | L5562 | LAU220J |
| **SWITCHES AND RELAYS** | | |
| | S5921-S5927 | VSG1024 |
| **CAPACITORS** | | |
| | C5674 | CCSRCH470J50 |
| | C5661,C5663 | CCSRCH471J50 |
| | C5564 | CEAL101M6R3 |
| | C5679,C5680 | CEAL1R0M50 |
| | C5678 | CEAL220M35 |
| | C5953 | CEAL470M16 |
| | C5671-C5673 | CKSRYB102K50 |
| | C5677,C5681 | CKSRYB103K50 |
| | C5562,C5563,C5665,C5666,C5675 | CKSRYB223K50 |
| | C5952 | CKSRYB223K50 |
| | C5676 CHIP VARISTOR | VCX1001 |
| **RESISTORS** | | |
| | All Resistors | RS1/16S###J |
| **OTHERS** | | |
| | CN5601 15P FFC CONNECTOR | 52044-1545 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 5951 | REMOTE RECEIVER UNIT | GP1UM27XK |
| | | FL HOLDER | VNF1122 |
| | V5601 | FL TUBE | XAV3021 |

## FM/AM TUNER UNIT

FM/AM TUNER UNIT has no service part.

# 6. ADJUSTMENT

## 6.1 ADJUSTMENT ITEMS AND LOCATION

### ■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

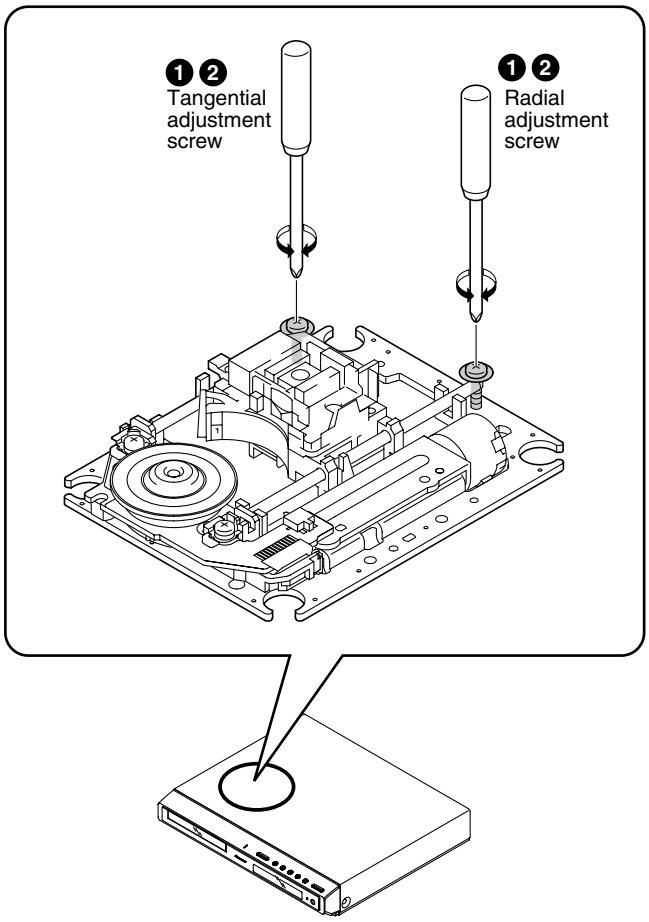
❷ DVD Jitter Adjustment

[Electrical Part]

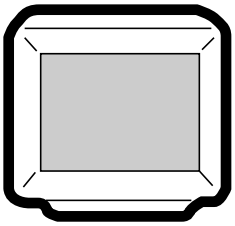
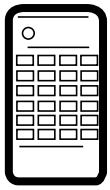
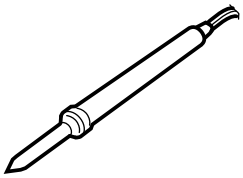
Electrical adjustments are not required.

### ■ Adjustment Points (Mechanism Part)

**Cautions:** After adjustment, adjustment screw locks with the Screw tight.




## 6.2 JIGS AND MEASURING INSTRUMENTS

| | | | |
|---|---|---|---|
| ⊕ Screwdriver (large) | ⊕ Screwdriver (medium) |  TV monitor |  Test mode remote control unit (GGF1381) |
| ⊕ Precise screwdriver | DVD test disc (GGV1025) |  Soldering iron | Screw tight (GYL1001) |

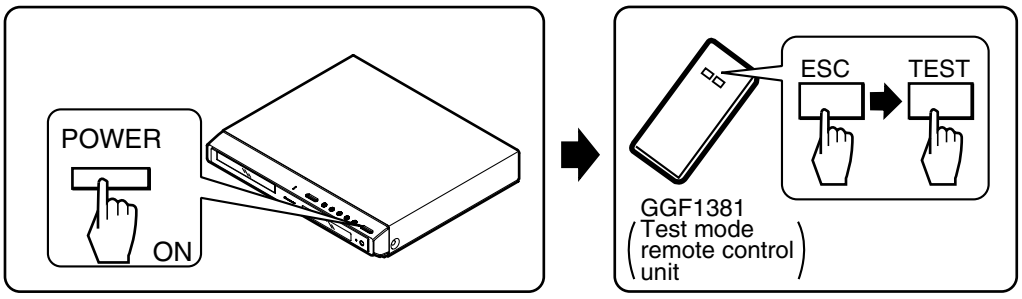
# 6.3 NECESSARY ADJUSTMENT POINTS

| When | Adjustment Points | |
|---|---|---|
| **■ Exchange Parts of Mechanism Assy** | | |
| Exchange the Pickup | Mechanical point | ❶, ❷ ＊ After adjustment, screw locks with the Screw tight. |
| | Electric point | ——— |
| Exchange the Traverse Mechanism | Mechanical point | ——— |
| | Electric point | ——— |
| Exchange the Spindle Motor | Mechanical point | ❷ ＊ After adjustment, screw locks with the Screw tight. |
| | Electric point | ——— |
| **■ Exchange PCB Assy** | | |
| Exchange PC Board<br>LOAB and DVDM ASSY | Mechanical point | ——— |
| | Electric point | ——— |

# 6.4 TEST MODE

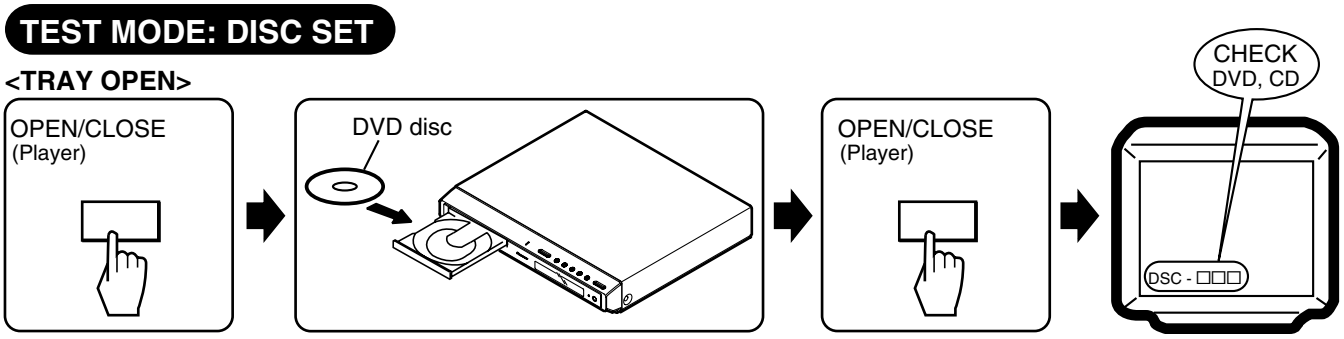
• The TEST MODE functions that are used only during adjustment are described here. For details, see "7.1.1 TEST MODE".

## TEST MODE: ON



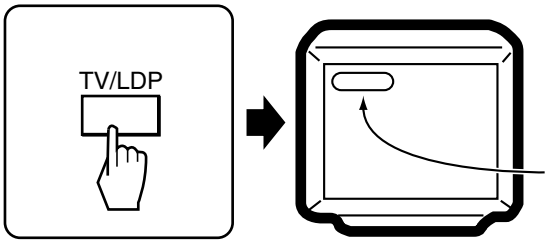

## TEST MODE: DISC SET

**<TRAY OPEN>**




## TEST MODE: PLAY

**<PLAY>**

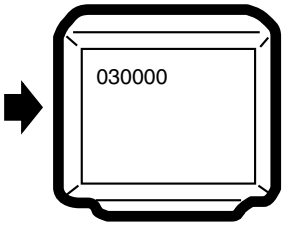



CAUTION:
Perform only trace, video and audio outputs are nothing.

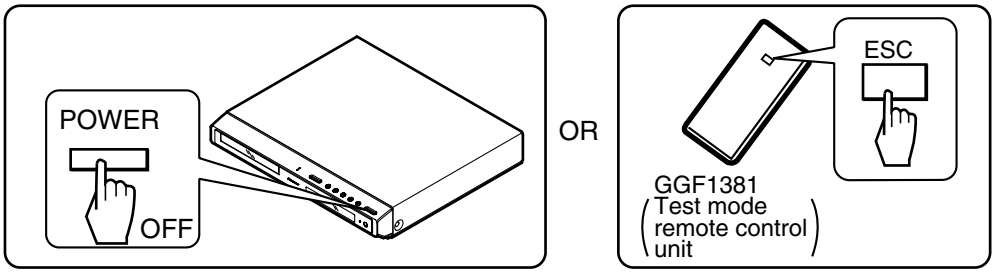
**< When playback with the target address of disc (DVD)>**

For example, when playback with # 30000

During PLAY [+10] ➡ [3] ➡ [0] ➡ [0] ➡ [0] ➡ [0] ➡ [CHP/TIM] Press keys in order




## TEST MODE: OFF

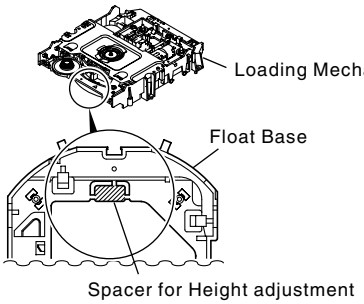


# 6.5 MECHANISM ADJUSTMENT

## 1 Tangential and Radial Height Coarse Adjustment

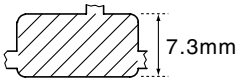
**START**

- Remove the Loading Mecha. Assy.
- Remove a Spacer for height adjustment attached to the back side (shaded area) of the Loading Mecha. Assy (Float Base) with nippers.

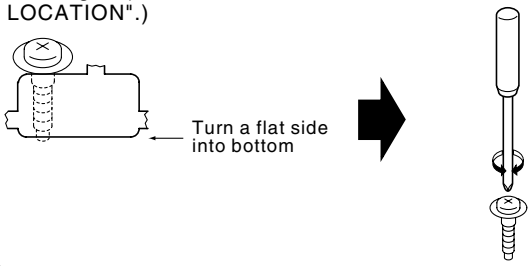



**Note:**
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.11 DISASSEMBLY".

**Cautions:**
Because there is not a Spacer for height adjustment in adjustment after the second time, will keep it at need.
(This parts is Traverse mechanism exclusive use of a model for 2003 years)




Put a spacer between a Tangential (or Radial) adjustment screw and Mechanism Base and turn each screw to adjust the height. (Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



## 2 DVD Jitter Adjustment

- Playback method of inner and outer address for the purpose is refererd to "6.4 TEST MODE".
- Jitter indication of the monitor is refererd to "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

Use disc: GGV1025

**START**

- Test mode
- Play the DVD test disc at outer track (around #200000)

Mechanism Assy

Adjust the Tangential Adjustment Screw so that jitter becomes minimum.

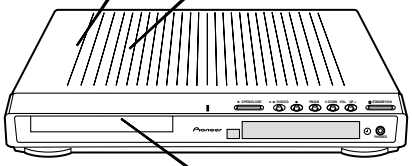
J : Min

- Play the DVD test disc at inner track (around #30000)

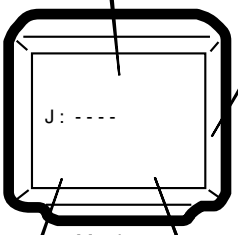
Mechanism Assy

Adjust the Radial Adjustment Screw so that jitter becomes minimum.

J : Min



Player




Monitor

- Play the DVD test disc at outer track (around #200000)

Mechanism Assy

Readjust the Tangential Adjustment Screw so that jitter becomes minimum.

J : Min

**CHECK**

Confirm the error rate that is displayed "OK"

(Example ERROR RATE: 6.6oe - 6 OK )

NG

Turn the POWER OFF in case of NG once, and perform the adjustment once again.

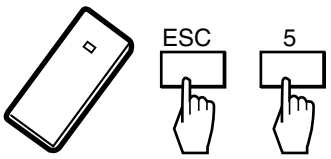
OK

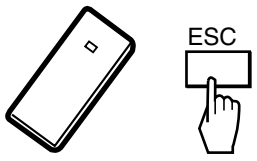
If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight.

Screw tight: GYL1001

Disc playback normally.

- The measurement of block error rate




Test mode end

# 7. GENERAL INFORMATION

## 7.1 DIAGNOSIS

### 7.1.1 TEST MODE

## ■ Test Mode Functional Specification

**① Test mode entry**

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

- Light the all FL and LEDs, and goes out the FL and LEDs when pressing the keys of something.
- OSD displays test mode. Refer to the "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

**② Release the Test mode**

- Turn off the power.
- Press the [ESC] (A8-5F) key of the remote control unit and reset it.

**③ Tray open / close**

- Press the [REPEAT A-B] (A8 - 48) key of the remote control unit.
- Press the [OPEN / CLOSE] key of the main unit from the stop state.

**④ Playback stop**

1. Press the [REPEAT] (A8 - 44) key of the remote control unit from the playback state.
2. Press the [STOP] key of the remote control unit or main unit from the playback state.
   (Playback stops, but the loaded disc keeps rotating.)

**⑤ LD ON**

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650n).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

**⑥ Focus on / sweep**

1. Lock the focus by pressing the [TEST] (A8-5E) and [2] (A8-02) keys in order.
2. Repeat focus sweep by pressing the [TEST] (A8-5E) and [3] (A8-03) keys in order.

**⑦ Spindle FG servo**

CAV : Press the [TEST] (A8-5E) and [5] (A8-05) keys in order,then rise up the spindle and FG servo becomes on.
CLV : Press the [TEST] (A8-5E) and [9] (A8-09) keys in order,then rise up the spindle and FG servo becomes on.

**⑧ Tracking open / close**

1. Open tracking by pressing the [STEP FWD] (A8-54) key of the remote control unit in the play state.
2. Close tracking by pressing the [STEP REV] (A8-50) key of the remote control unit in the play state.

**⑨ Slider servo on/off**

1. Turn on the slider servo by pressing the [TEST] (A8-5E) and [CX] (A8-0E) keys in order.
2. Turn off the slider servo by pressing the [TEST] (A8-5E) and [TV/LDP] (A8-0F) keys in order.

**⑩ Slider in / out**

Slider in : In the tracking off state, press the [SCAN REV] (A8-11) key of the remote control unit.
Slider out : In the tracking off state, press the [SCAN FWD] (A8-10) key of the remote control unit.

**⑪ Play (perform only the ID search and trace to the specified location)**

Press the [TV/LDP] (A8-0F) key of the remote control unit from the stop state.
Perform only trace, video and audio outputs are nothing.

**⑫ Screen display ON/OFF**

1. Turn off the display by pressing the [AUDIO] (A8-1E) key of the remote control unit.
2. Turn on the display by pressing the [DISPLAY] (A8-43) key of the remote control unit.

## ⑬ Search

### 1. Search address input entry

- It becomes the address input mode when pressing the [+10] (A8-1F) key. (Most significant digit of an address displays "<".)
- In this time, display the last address as the initial state.

### 2. Search address input

- Press the [0] to [9] (A8-00 to 09) keys of the remote control unit. In the DVD, set an address with hexadecimal.
- In the address input mode, turn to the hexadecimal input by pressing the [PROGRAM] (A8-4C) key (display a "∗" mark), and [1] to [6] keys are each input as A to F.
- Hexadecimal input and decimal input can switch with toggle.
- In case of CD, perform only the absolute time search.

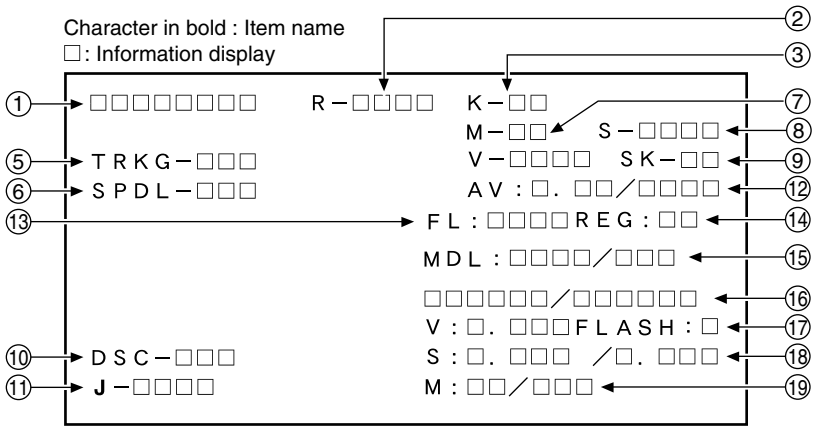
### 3. Search execution

- Press the [CHP/TM] (A8-13) key of the remote control unit.
- After the search, perform only trace and video and audio outputs are nothing.

### 4. Release the Search address input

- Clear the address by pressing the [CLEAR] (A8-45) key. Release the address input mode when pressing the [CLEAR] key once again.

## 7.1.2 DISPLAY SPECIFICATIONS OF THE TEST MODE




① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : A-TIME (min. sec.) [0 0 0 0 ＊＊＊＊]

② **Code indication of remote control unit [R – ＊＊＊＊]**
In case of double code, display a 2nd code.

③ **Main unit keycode indication [K – ＊＊]**

⑤ **Tracking status [TRKG – ＊＊＊]**
Tracking on : [ON]
Tracking off : [OFF]

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [ACC/BRK], [CAV], [CLV]

⑦ **Mechanism (loading) position value [M – ＊＊]**
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ **Slider position [S – ＊＊＊＊]**
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ **Output video system [V – ＊＊＊＊]**
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

**Scart terminal output [SK – ＊＊]**
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ **Disc sensing [DSC – ＊＊＊]**
The type of discs loaded is displayed.
[DVD], [CD ], [VCD], [ ]

⑪ **Jitter value [J – ＊＊＊＊]**

⑫ **Version of the AV-1 chip / version of firmware [AV: ＊＊ / ＊＊＊＊＊＊＊＊]**

⑬ **Version of the FL controller [FL: ＊＊＊＊]**

⑭ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑮ **Destination setting of the FL controller [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent the type of model.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM,
LB: /LB, WY: /WY

⑯ **Part number of the flash ROM and system controller [＊＊＊＊＊＊ / ＊＊＊＊＊＊]**

⑰ **Version of the flash ROM [V: ＊. ＊＊＊]**
**Flash ROM size [FLASH = ＊＊]**

⑱ **Revision of the system controller [S: ＊. ＊＊＊ / ＊. ＊＊＊]**
version . revision / build number of the ST core

⑲ **Revision of the DVD mechanism controller [M: ＊＊ / ＊＊＊]**
Kinds of version / firmware of the FE.
RAM or ROM

## 7.1.3 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

| Command Contents | Conditions | Remote Control Key Name | Remote Control Code |
|---|---|---|---|
| Memory clear and resion / revision indication | | CLEAR (∗1) | A8-45 |
| Average value measurement of DVD error rate | | 5 (∗1) | A8-05 |
| CD error rate measurement | | 5 (∗1) | A8-05 |
| Aspect : Pan scan | | 2 | AF-A2 |
| Aspect : Letter box | | 3 | AF-A3 |
| Aspect : Wide | | 4 | AF-A4 |
| Digital : AC3 | | 5 | AF-A5 |
| Digital : AC-3 > PCM | | 6 | AF-A6 |
| Virtual surround : OFF | Only for models having the corresponding functions | 7 | AF-A7 |
| Virtual surround : TruSurround | | 8 | AF-A8 |
| Digital output ON | | REPEAT A | AF-E8 |
| Digital output OFF | | REPEAT B | AF-E4 |
| DTS Digital output ON | | STEP FWD | AF-B7 |
| DTS Digtal output OFF | | STEP REV | AF-B8 |
| Scart terminal output : VIDEO | WY, models equipped with Scart terminal | AUDIO | AF-BE |
| Scart terminal output : S-VIDEO | | SUBTITLE | AF-36 |
| Scart terminal output : RGB | | ANGLE | AF-B5 |
| Progressive OFF | Only for progressive models | R_SKIP | A3-9D |
| Progressive ON | | F_SKIP | A3-9C |
| Audio 5.1 CH ON | Only for models having the corresponding functions | KD_ENTER | AF-EF |
| FL indication of EDC / ID error | | CX (∗1) | A8-0E |
| FL indication of ID number | | STEREO (∗1) | A8-4A |
| ZOOM ON (X4) | | ZOOM | AF-37 |
| ZOOM OFF | | < X3 (∗1) | A8-59 |
| Service mode indication (error rate indication, etc.) | | CHP/TIM (∗1) | A8-13 |
| Model information indication | | CHAP (∗1) | A8-40 |
| Background color change | | +10 (∗1) | A8-1F |
| Audio last stage mute ON | | 9 | AF-A9 |
| Audio last stage mute OFF | | 0 | AF-A0 |
| Title search Input mode IN<br>Title No. input<br>Search execution | | SIDE A (∗1)<br>Numbers (∗1)<br>PLAY (∗1) | A8-4D<br>A8-00 to A8-09<br>A8-17 |
| Region confimation mode | | AUDIO (∗1)<br>Numbers (∗1) | A8-1E<br>A8-01 to A8-08 |

∗1 : Test mode remote control unit

**• Service mode indication (ESC + CHP/TIM keys)**
ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID/AV 1 Error, last eight errors)
Self-diagnosis functions (If a mechanical error has occurred, the mechanical-error history is also displayed.)

**• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)**
The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

**• Indication of model information (ESC + CHAP keys)**
The items from 12 to 19 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to B.E VERSION, and M is changed to F.E VERSION. For details, see 7.1.4.

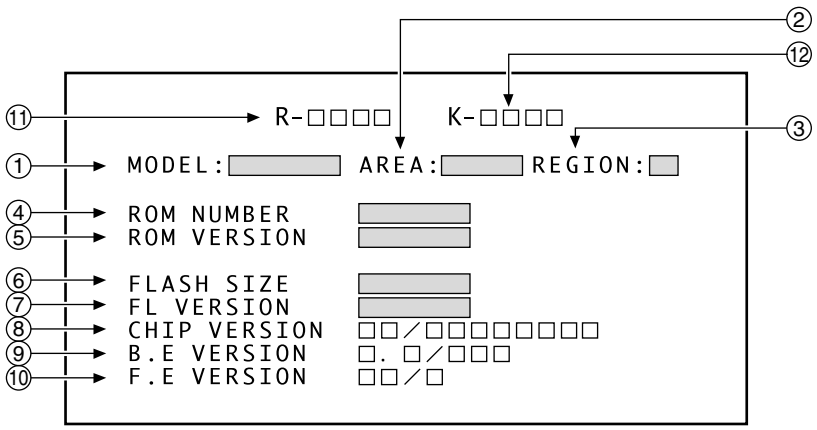
**• Change of the background colors (ESC + "+10" [Test mode remote control unit] keys)**
Every time the keys are pressed, the background color is changed between blue and green alternately.
(The green background is used in SETUP NAVIGATOR.)

**• Region confirmation mode (ESC + AUDIO [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)**
After you press the AUDIO key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

## 7.1.4 SPECIFICATION OF MODEL INFORMATION DISPLAY

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

• **Display contents**




Character in bold : Item name
□: Information display

① **Model name**
Display it according to model information set from the FL controller.
② **Destination indication**
Display it according to model information set from the FL controller.
③ **Region No.**
④ **Part number**
⑤ **ROM version**
⑥ **Flash size**
⑦ **FL controller version**

⑧ **CHIP VERSION**
Version of ST CHIP
CUT ID / JTAG ID
(two columns) (eight columns)
⑨ **B.E VERSION**
Version of BACK END (version of ST core software)
□.□ /□□□
softwareVersion . softwareRevision / buildNumber
⑩ **F.E VERSION**
Version of FRONT END (version of mechanism controller CHIP software)
□□/ □
MainVersion / Kinds of firmware RAM or ROM
⑪ **Remote control code**
⑫ **Key code of Main unit**

## 7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

**• EDC / ID error FL display (shortcut function)**

EDC/ID error is displayed on the FL display if you press the CX key while holding the ESC key on the TEST MODE remote control unit pressed. To quit while an EDC/ID error is displayed, press the ESC key.

FL display

00 /00 / 01 ∗

∗: Lights when an AV1 error was generated at least once.

Number of sites where an EDC or ID error was generated

Number of retrials while an ID error is being generated
(only displayed at the moment when an error is being generated),
and for the ST models, the number of retrials made for the latest ID error

Number of retrials while an EDC error is being generated
(only displayed at the moment when an error is being generated),
and the number of retrials made for the latest EDC error

**• Display during Service Mode**

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

**Service mode display**

① ID Address

② Error rate (always displayed), in exponential notation

∗∗ (∗∗∗∗)

Number of error rates

02: Indicates use of the same method as for the 02 models,
No indication: Indicates use of the method used for models before the 02 model

③ EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 errors, last eight errors)

Description of AV1 errors
BIT0: In BE code, an EDC error, FEC I/F buffer overflow, or "not valid" is generated (B.E error)
BIT1: In BE code, the ID is different from that of the target (B.E error)
BIT2: An error was generated in FE-added 2-byte EDC data. (F.E error)

④ Self-diagnosis functions

Whether F.E is normal or not is checked.

FE OK: No abnormality in F.E
FE Error: Abnormality is recognized in F.E.
Pressing the CHP/TIM key again displays the mechanical error history. Each press of the CHP/TIM key changes the displays between the mechanical error history and the Service Mode display.
For details on the mechanical error history, refer to the addendum.

Indication plan contents

| AV1 ERR | BIT 2 | 1 | 0 |
|---|---|---|---|
| 00 | 0 | 0 | 0 |
| 01 | 0 | 0 | 1 |
| 02 | 0 | 1 | 0 |
| 03 | 0 | 1 | 1 |
| 04 | 1 | 0 | 0 |
| 05 | 1 | 0 | 1 |
| 06 | 1 | 1 | 0 |
| 07 | 1 | 1 | 1 |

Character in bold : Item name
□: Information display

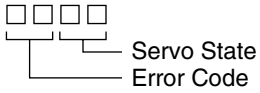
# 7.1.6 MECHANICAL ERROR HISTORY

## ■ Mechanical Error History

Only if a mechanical error (FE error) has been generated, a mechanical error history containing up to the last eight errors is displayed if you press the "ESC" + "CHP/TIM" key in Normal Mode.
Errors are displayed in descending order, with the latest one at the top.

**Description of the mechanical error history**

① Error number
The first two digits are for the error code, and the second two digits are for the servo state.

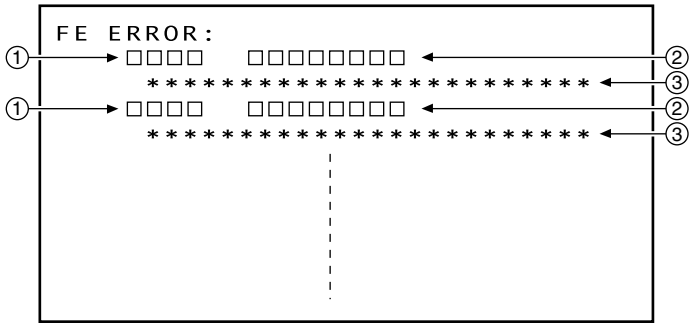



② Error number
The elapsed time from the time when the system was turned on until an error was generated is displayed.
Note: If a later error time is shorter than the previous error time, it means that the unit was turned off then on again.

③ Description of errors
Error messages are displayed.
Example: If the error code is 0x13 (Focus lost timeout) and the servo state is 0x05 (Disc judge), the message becomes "Focus lost timeout in Disc judge."

Note: When an error has been generated, if the servo state is "Disc judge," the disc tray opens, and if the servo state is other than "Disc judge," the unit stops (excluding a case of a device error with the error code 0xd∗).

Indication contents




**• List of the error codes**

| | | | |
|---|---|---|---|
| **FOCUS ERROR** | 0x0∗ | **FOCUS TIMEOUT** | 0x1∗ |
| Focus on error | 0x01 | Focus on timeout | 0x11 |
| Focus off error | 0x02 | Focus off timeout | 0x12 |
| Focus lost error | 0x03 | Focus lost timeout | 0x13 |
| Focus balance adjust error | 0x04 | Focus balance adjust timeout | 0x14 |
| Focus gain adjust error | 0x05 | Focus gain adjust timeout | 0x15 |
| Focus sweep error | 0x06 | Focus sweep timeout | 0x16 |
| Focus reflection error | 0x07 | Focus reflection timeout | 0x17 |
| **TRACKING ERROR** | 0x2∗ | **TRACKING TIMEOUT** | 0x3∗ |
| Tracking on error | 0x21 | Tracking on timeout | 0x31 |
| Tracking off error | 0x22 | Tracking off timeout | 0x32 |
| Tracking lost error | 0x23 | Tracking lost timeout | 0x33 |
| Tracking balance adjust error | 0x24 | Tracking balance adjust timeout | 0x34 |
| Tracking gain adjust error | 0x25 | Tracking gain adjust timeout | 0x35 |
| **STEPPING ERROR** | 0x4∗ | **STEPPING TIMEOUT** | 0x5∗ |
| Stepping on error | 0x41 | Stepping on timeout | 0x51 |
| Stepping off error | 0x42 | Stepping off timeout | 0x52 |
| Stepping lost error | 0x43 | Stepping lost timeout | 0x53 |
| Stepping move error | 0x44 | Stepping move timeout | 0x54 |
| **SPINDLE ERROR** | 0x6∗ | **SPINDLE TIMEOUT** | 0x7∗ |
| Spindle on error | 0x61 | Spindle on timeout | 0x71 |
| Spindle off error | 0x62 | Spindle off timeout | 0x72 |
| Spindle lost error | 0x63 | Spindle lost timeout | 0x73 |
| Spindle CAV error | 0x64 | Spindle CAV timeout | 0x74 |
| Spindle CLV error | 0x65 | Spindle CLV timeout | 0x75 |
| **ACQUISITION ERROR** | 0x8∗ | **ACQUISITION TIMEOUT** | 0x9∗ |
| PLL lost error | 0x83 | PLL lost timeout | 0x93 |
| **DECODER ERROR** | 0xa∗ | **DECODER TIMEOUT** | 0xb∗ |
| ID lost error | 0xa3 | ID lost timeout | 0xb3 |
| **DEVICE ERROR** | 0xd∗ | | |
| SRAM error | 0xd1 | | |

**• List of the servo states**

| | |
|---|---|
| 0x00 | Reset |
| 0x01 | Stop (inside position) |
| 0x02 | Stop (any position) |
| 0x03 | Braking for stop |
| 0x04 | New disc |
| 0x05 | Disc judge |
| 0x06 | Reserved 1 |
| 0x07 | Playing |
| 0x08 | Start up |
| 0x09 | Seeking |
| 0x0A | Pausing |
| 0x0B | Reading BCA |
| 0x0C | Reserved 2 |
| 0x0D | |
| 0x0E | Tray open |
| 0x0F | Tray moving |

Note : 0 x □□
code
(Only this part is displayed to a display)

## ERROR CODE TABLE

| Error Name | No. | Causes | Check Item | Possibility of Trouble | Remarks |
|---|---|---|---|---|---|
| FOCUS ERROR (0 x 0∗) | | | | | |
| Focus on error | 0 x 01 | Focus on could not be completed | Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Focus off error | 0 x 02 | Focus off could not be completed | Unknown | | |
| Focus lost error | 0 x 03 | Focus servo is lost | Are not there a dirt or a scratch in the Disc? Does LD become weak? | 1. Pickup | |
| Focus balance adjust error | 0 x 04 | AFB on could not be completed | | | |
| Focus gain adjust error | 0 x 05 | Focus AGC could not be completed | | | |
| Focus sweep error | 0 x 06 | | | | |
| Focus reflection error | 0 x 07 | Dimensions of S curve did not reach to the aim value | Does LD become weak? | 1. Pickup | |
| FOCUS TIMEOUT (0 x 1∗) | | | | | |
| Focus on timeout | 0 x 11 | Did timeout at focus on | Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Focus off timeout | 0 x 12 | Did timeout at focus off | | | |
| Focus lost timeout | 0 x 13 | Did timeout at focus backup | | | |
| Focus balance adjust timeout | 0 x 14 | Did timeout at AFB | | | |
| Focus gain adjust timeout | 0 x 15 | Did timeout at AGC | | | |
| Focus sweep timeout | 0 x 16 | | | | |
| TRACKING ERROR (0 x 2∗) | | | | | |
| Tracking on error | 0 x 21 | Tracking on could not be completed | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Tracking off error | 0 x 22 | Tracking off could not be completed | | | |
| Tracking lost error | 0 x 23 | Tracking servo is lost | | 1. Pickup | |
| Tracking balance adjust error | 0 x 24 | ATB could not be completed | | 1. Pickup | |
| Tracking gain adjust error | 0 x 25 | AGC could not be completed | | 1. Pickup | |
| Tracking jump error | 0 x 26 | Tracking jump could not be completed | | | |
| TRACKING TIMEOUT (0 x 3∗) | | | | | |
| Tracking on timeout | 0 x 31 | Did timeout at tracking on | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Tracking off timeout | 0 x 32 | Did timeout at tracking off | | | |
| Tracking lost timeout | 0 x 33 | Did timeout at tracking backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup | |
| Tracking balance adjust timeout | 0 x 34 | Did timeout at ATB | | 1. Pickup | |
| Tracking gain adjust timeout | 0 x 35 | Did timeout at AGC | | 1. Pickup | |
| Tracking jump timeout | 0 x 36 | Did timeout at tracking jump | | | |
| STEPPING ERROR (0 x 4∗) | | | | | |
| Stepping on error | 0 x 41 | Stepping on could not be completed | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Stepping off error | 0 x 42 | Stepping off could not be completed | | | |
| Stepping lost error | 0 x 43 | Stepping servo is lost | | | |
| Stepping move error | 0 x 44 | Stepping could not move | Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping? | 1. Stepping motor<br>2. Inside switch<br>3. Driver | |
| STEPPING TIMEOUT (0 x 5∗) | | | | | |
| Stepping on timeout | 0 x 51 | Did timeout at stepping on | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Stepping off timeout | 0 x 52 | Did timeout at stepping off | | | |
| Stepping lost timeout | 0 x 53 | Did timeout at stepping backup | | | |
| Stepping move timeout | 0 x 54 | Did timeout at stepping movement | Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping? | 1. Stepping motor<br>2. Inside switch<br>3. Driver | |

| Error Name | No. | Causes | Check Item | Possibility of Trouble | Remarks |
|---|---|---|---|---|---|
| SPINDLE ERROR (0 x 6*) | | | | | |
| Spindle on error | 0 x 61 | Spindle on could not be completed | | | |
| Spindle off error | 0 x 62 | Spindle off could not be completed | | | |
| Spindle lost error | 0 x 63 | Spindle lost control | | | |
| Spindle CAV error | 0 x 64 | CAV on could not be completed | | | |
| Spindle CLV error | 0 x 65 | CLV on could not be completed | | | |
| SPINDLE TIMEOUT (0 x 7*) | | | | | |
| Spindle on timeout | 0 x 71 | Did timeout at spindle on | | | |
| Spindle off timeout | 0 x 72 | Did timeout at spindle stop | | | |
| Spindle lost timeout | 0 x 73 | Did timeout at spindle backup | Are not there a dirt or a scratch in the Disc?<br>Is FG output from the driver? | 1. Spindle motor<br>2. Spindle driver | |
| Spindle CAV timeout | 0 x 74 | Did timeout at CAV on | Is spindle rotating?<br>Is FG output from the driver?<br>Is the PDM output from L6315? | 1. Spindle motor<br>2. Spindle driver<br>3. Front End IC | |
| Spindle CLV timeout | 0 x 75 | Did timeout at CLV on | | | |
| ACQUISITION ERROR (0 x 8*) | | | | | |
| PLL lost error | 0 x 83 | PLL is lost | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| ACQUISITION TIMEOUT (0 x 9*) | | | | | |
| PLL lost timeout | 0 x 93 | Did timeout at PLL backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DECODER ERROR (0 x a*) | | | | | |
| ID lost error | 0 x a3 | ID is not readable | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DECODER TIMEOUT (0 x b*) | | | | | |
| ID lost timeout | 0xb3 | Did timeout at ID backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DEVICE ERROR (0 x d*) | | | | | |
| SRAM error | 0 x d1 | Cannot access SRAM | Power supply of SRAM<br>Is not bus line short-circuiting? | 1. SRAM<br>2. Front End IC<br>3. Front End-SRAM bus line | |
| FAILSAFE (0 x e*) | | | | | |
| Unexpected error | 0 x e1 | Unexpected error | | 1. software runaway<br>3. Software bug | |

# ■ Protection Specifications and Service Mode

## • Protection Specifications

The system microcomputer (CONTRL Assy IC5501) for this unit always monitors if abnormality of the power is generated, and as soon as an abnormality is detected shuts off the power. The specifications of the microcomputer terminal for monitoring are as follows:

| Name of microcomputer terminal | | XPROTECT (Pin 22) | VDET (Pin 17) |
|---|---|---|---|
| Monitoring item | | Abnormality of AMP-system power<br>Short-circuiting of the SP terminal, etc. | Abnormality of power inside the DVDM Assy |
| Voltage at terminal | In normal conditions | 0.71× Vdd* or more | 0.5 Vdd-0.85 Vdd* |
| | In abnormal conditions | 0.36×Vdd–0.71× Vdd* | |
| | In failure | 0.36×Vdd* or less | 0.85 Vdd* or more<br>0.5 Vdd* or less |
| Monitoring start time | | 1.5 sec after power is turned on | 1.5 sec after power is turned on |
| Time required for determining abnormality | | 0.5 sec after detection | 0.5 sec after detection |

*Vdd = Approx. 5 V (depending on the unit)

In abnormal conditions or in failure, the TIMER LED flashes after the power is shut off. If the power was shut off because of an abnormality, it can be turned on by pressing the STANDBY/ON key. However, if the power was shut off because of failure, **for one minute after a shutdown the STANDBY/ON key is disabled in order to protect against possible ignition of fumes.** If the AC power cord is pulled out during this one minute of standby, when the AC power cord is reconnected, the STANDBY/ON key will still be disabled until the remaining seconds have elapsed.

This unit has Service Test mode for analyzing the above power abnormality. Its specifications are as follows:

### 1. Specific conditions for Service Test mode

- VDET is neglected.
- XPROTECT is neglected.
- **Even if the unit is urgently shut down in failure in Normal mode, you can turn it on without waiting for one minute.**

### 2. How to enter Service Test mode

- While connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord. (See next page.)

### 3. How to quit Service Test mode, and the conditions for quitting

- To quit Service Test mode, turn the power off or disconnect the AC power cord.
- When quitting Service Test mode, only data on protection in RAM are cleared.

### 4. Indications when Service Test mode starts

- Indications on the FL display when Service Test mode starts differ depending on whether the unit was turned off normally or if the unit was urgently shut down because the abnormality of the power, as described below.

**[After the power is turned off normally]**

FL display `W e l c o m e !`
⇩
FL display `V o l u m e 0`
⇩
FL display `D V S E R V I C E`

**[After the power is shut down because of an abnormality in the AMP system]**

FL display `P R T C T W N G`
⇩
FL display `V o l u m e 0`
⇩
FL display `D V S E R V I C E`

**[After the power is shut down because of a failure in the AMP system]**

FL display `P R T C T E R R`
⇩
FL display `V o l u m e 0`
⇩
FL display `D V S E R V I C E`

**[After the power is shut down because of a failure in the DVD system]**

FL display `D V D P R T E C T`
⇩
FL display `V o l u m e 0`
⇩
FL display `D V S E R V I C E`

### 5. Operations during Service Test mode

- Basically, operations in Service Test mode are the same as in Normal mode. However, to clarify that it is in Service Test mode, during this mode, when functions are changed, the indications on the FL display become as follows:

| [Functions] | [Indications on the FL display] | [Functions] | [Indications on the FL display] |
|---|---|---|---|
| DVD/CD | `D V S E R V I C E` | LINE2 | `L 2 S E R V I C E` |
| TUNER | `T X S E R V I C E` | TV | `T V S E R V I C E` |
| LINE1 | `L 1 S E R V I C E` | | |

## 6. Operations during DSP module error diagnosis function

**[ How to enter DSP module error diagnosis]**

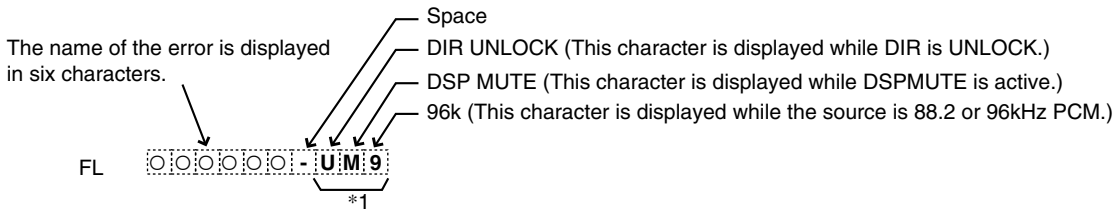
• Press "DISPLAY" button of the accessory remote control in service test mode to show DSP error messages.

**[ How to quit DSP module error diagnosis]**

• Press "DISPLAY" button of the accessory remote control again to select normal service test mode.

For this reason, the usual function of "display" is not effective during Service Test mode.
• DVD total running time/remaining time display is inactive.
• OSD changing on TV is also inactive.

### ■ Specification of DSP error display

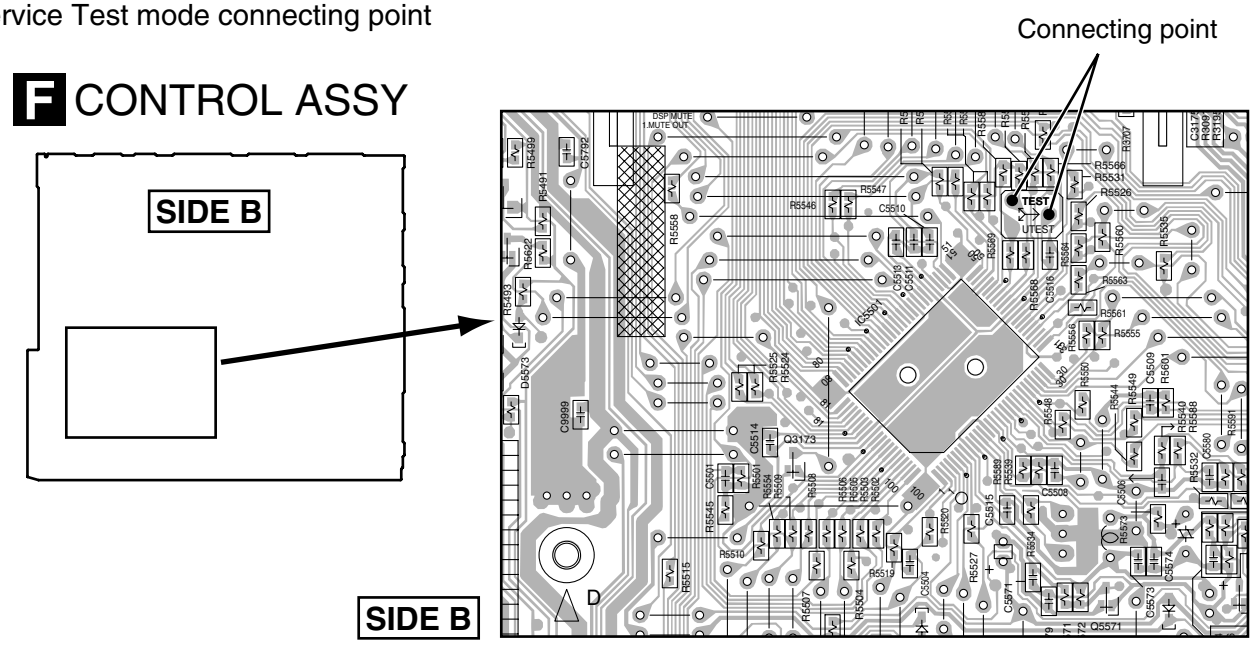

The name of the error is displayed in six characters.
Space
DIR UNLOCK (This character is displayed while DIR is UNLOCK.)
DSP MUTE (This character is displayed while DSPMUTE is active.)
96k (This character is displayed while the source is 88.2 or 96kHz PCM.)
FL
- U M 9
*1

*1 : The "U", "M" and "9" are not displayed synchronizing with the display "ERR_0" - "ERR_4" ("DIRERR",etc), but it depends on the state each time.
The following example display of "ERR_0" - "ERR_4" is just a sample.

| [Error] | [Indications on the FL display] |
|---|---|
| ERR_0 | D I R E R R - U M |
| ERR_1 | D S P E R R - U M |
| ERR_2 | H R E Q - U M |
| ERR_3 | D S P N G - U M |
| ERR_4 | D M U T E - M |
| NO ERR | D S P O K - |

Refer to "7.1.10 DSP TROUBLE SHOOTING".

### ■ Service Test mode connecting point



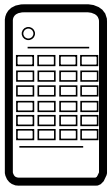
## 7.1.7 ID NUMBER AND DATA SETTING

**Caution:**
For the DVD players compatible with DVD-RW, for playback of a DVD-RW disc (CPRM), it is necessary that an individual ID number and ID data are set for each player. If the ID number and ID data be not properly set in the manner described below, future operations cannot be guaranteed. The ID number is written on the yellow label at the rear panel of the player.
**If there is no yellow label, before downloading FLASH ROM, take note of the ID number set following the procedures outlined in "ID Number Confirmation Mode" on the next page.**

**Note:** Enter ID numbers while the unit is in Stop mode so that the values set will be immediately written to the flash ROM.

**Setting an ID number or ID data is required in the following case:**
If "No ID Number!" or "NO ID DATA!" is displayed on the TV screen and on the FL display for a few seconds immediately after the power to the player is turned on or during Stop mode.

**JIGS AND MEASURING INSTRUMENTS**

| | |
|---|---|
|  Service Remote Control Unit (GGF1381) | DVD Data Disc (GGV1133) (GGV1174) * Refer to "■ Jigs list". |

## ■ ID Number Input Mode

① To enter ID Number Input Mode, with no ID number set, such as in a case of immediately after upgrading the firmware, press the ESC key then the STEREO key.

**Note:** If a previous ID number and ID data, such as a factory-preset ID number and ID data, are maintained, the unit enters ID Number Confirmation Mode when the above keys are pressed. However, if only an ID number is maintained, the unit enters ID Data Input Mode.

② Enter a 9-digit ID number. The ID number is also displayed on the FL display.

③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
② - - - - - - - - -
③ <CLEAR>  Exit

 Input ID Number !
```

④ After entering all 9 digits, if you press the PLAY key, the unit enters Compare mode. Enter the same ID number again. Only if your two input numbers match, the ID number is set. Compare mode helps eliminate mistyping of the ID number.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

⑤ After entering all 9 digits, if you press the SEARCH key, the unit unconditionally sets the input number as the ID number. Then the unit automatically enters Player's Data Input Mode. (The SEARCH key is not accepted after all 9 digits have been entered.)

```
[Player's ID Number Setting]
 ID Number ?
  0 0 0 0 0 0 0 0 1

④ <PLAY>      Compare Mode
⑤ <SEARCH>  Enter

 Input ID Number !
```

⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the FL display.

⑦ By pressing the CLEAR key without having input a number, the unit returns to Step ② without doing anything else. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
⑥   * * * * * * * * *


 Input ID Number !
```

⑧ After entering all 9 digits, if you press the PLAY key, the unit compares the numbers input in Steps ② and ⑥, and only if the numbers match, that number is set as the ID. Then the unit automatically enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Input Mode.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ⑥ without doing anything else.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
    0 0 0 0 0 0 0 0 1

⑧ <PLAY>  Enter

 Input ID Number !
```

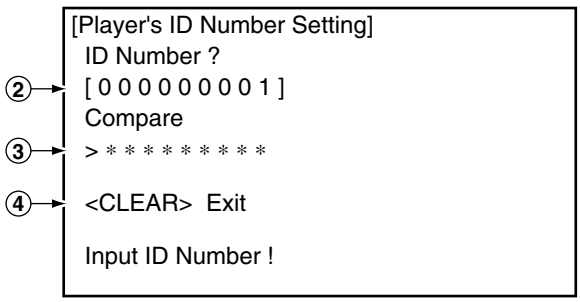
## ■ ID Number Confirmation Mode

① To enter ID Number Confirmation Mode after the ID number and the ID data are set, press the ESC key then the STEREO key.

② The ID number already set is displayed.
(It is also displayed on the FL display.)

③ Enter a 9-digit number for comparison. This is not required when you only wish to check the ID number visually.
(The number is also displayed on the FL display.)

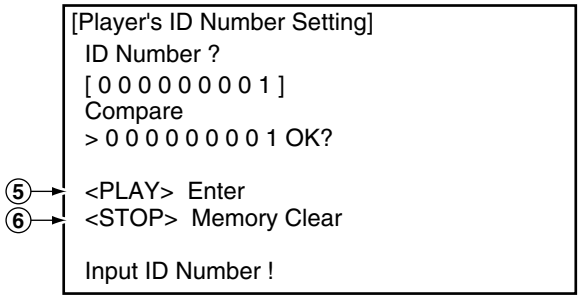
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.




⑤ After entering all 9 digits, if you press the PLAY key, the unit compares the number entered in Step ② with the ID number set, and only if the numbers match, the unit automatically exits ID Number Confirmation Mode. If an ID data has not been entered, the unit enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Confirmation Mode.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ④ without doing anything else.

⑥ After entering all 9 digits, if you press the STOP key, the unit compares the number entered in Step ③ with the ID number set, and only if the numbers match, the unit automatically deletes the ID number and exits this mode. If the numbers do not match, the disc tray is opened, and the unit exits this mode. (The STOP key is not accepted after all 9 digits have been entered.)




### • Indication of an ID number already set

An ID number already set is displayed in the following cases:

1) When the ESC key then the CLEAR key are pressed, user settings are cleared, then the ID number set is displayed on the screen. In this case, the ID number is not displayed on the FL display.
2) When the unit enters ID Number Confirmation Mode by your pressing the ESC key then the CLEAR key, the ID number set is displayed. In this case, the ID number is also displayed on the FL display.
   If you only need to confirm the ID number, you can exit this mode by pressing the CLEAR key or turning off the power.

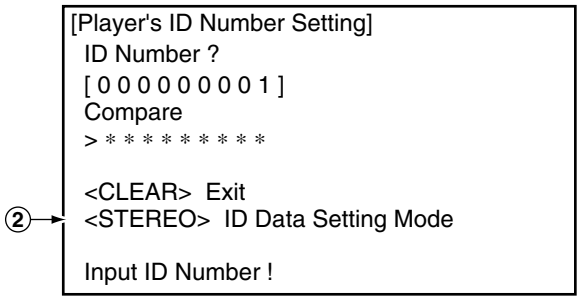
### • Indication when no ID number is set

If no ID number is set, the message "No ID Number!" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

## ■ ID DATA Input Mode

① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

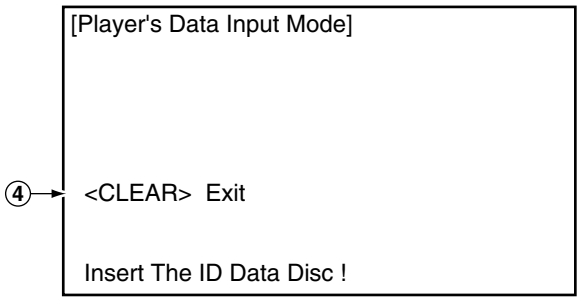
② When the STEREO key is pressed, the unit enters ID DATA Input Mode.




③ If the DVD DATA DISC (GGV1133, GGV1174*) is loaded in this mode, the unit automatically starts reading the data.
(If the ID DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

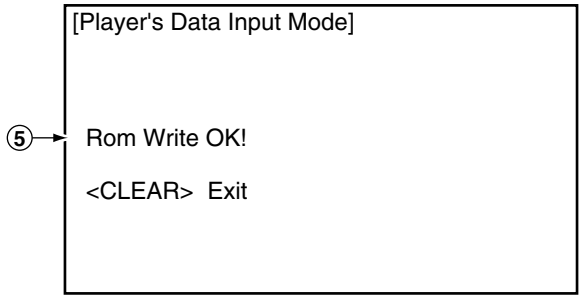
* Refer to "■ Jigs list".

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC (GGV1133, GGV1174*), you cannot exit this mode.

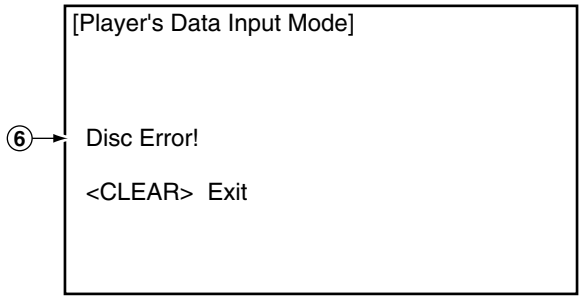



⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

**Note:** Whether or not the data have been written to flash ROM can be confirmed by watching for the message "Rom Write OK!" being displayed after the disc is read.




⑥ If the data cannot be read from the disc, "Disc Error!" is displayed on the screen, and the disc is ejected.




**• Indication when the data have not been set**

If no ID data are set after the ID number is changed, the message "NO ID DATA" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

## 7.1.8 METHOD FOR DIAGNOSING DEGRADATION OF THE LDS ON THE PICKUP ASSY

**Case when this diagnosis is required :**
When playback of any disc, including a test disc (DVD: GGV1025, CD: STD-905), cannot be performed

### How to diagnose

In the case mentioned above, degradation of the laser diodes (LDs) mounted on the PICKUP Assy is suspected.
Measure the voltage between the two ends of one of the resistors mentioned below.

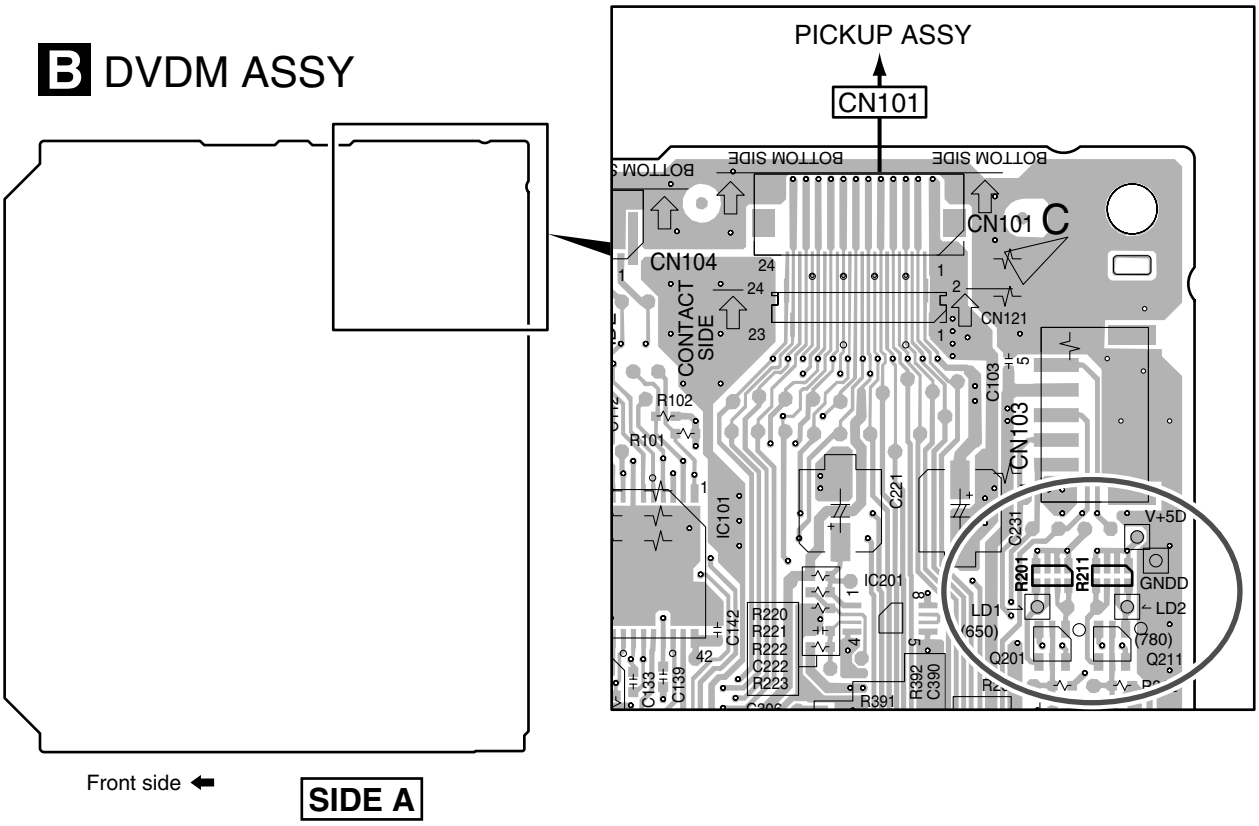
- **No playback of a DVD :**

  Measure the voltage between the two ends of R201 on the DVDM Assy. If the voltage is 0.7 V or higher, the 650-nm LD is degraded.

- **No playback of a CD :**

  Measure the voltage between the two ends of R211 on the DVDM Assy. If the voltage is 1.5 V or higher, the 780-nm LD is degraded.

If the measurements show degradation of an LD, replace the PICKUP Assy.



## 7.1.9 TROUBLE SHOOTING

### Microcomputer Section (CONTROL Assy : IC5501)

| Symptom | Possible Cause | Check Method |
|---|---|---|
| • The unit cannot be turned on. | The microcomputer was not reset. | Check if the level of the terminal XRESET (Pin 8) is "H." If it is not, check the RESET circuit. |
| | The AC pulse is not input. | Check if the AC pulse is input to Pin 4 of the AC input terminal. If it is not, check the AC pulse generation circuit. |
| | The oscillation circuit of the microcomputer does not function. | The microcomputer or the oscillation circuit is broken. Change the microcomputer or the oscillation circuit. |
| The unit shuts itself off soon after it is turned on. | • If the Function is DVD, the voltage of the VDET input (Pin 17) is either 0.5 Vdd* or less or 0.85 Vdd* or more.<br>• The voltage of the PROTECT input (Pin 22) is 0.71 Vdd* or less. | If the voltage at Pin 17 of the VDET terminal of the microcomputer is either 0.5 Vdd or less or 0.85 Vdd or more, adjust so that it stays between 0.5 and 0.85 Vdd. |
| • DVD does not operate at all.<br>• Time is not displayed in FL display during DVD function. | Communication with the DVD microcomputer has not been established. | • Check that the terminal (Pins 23-25, 29, and 30) for communication with the DVD microcomputer is live, and if it is not, check if the flexible cable is disconnected.<br>• Check if an "H" signal is output to Pin 93 of the XDVDRST terminal. |
| All operation keys are disabled. | The unit recognizes that an operation key has already been pressed. | If no operation key has been pressed, check if the voltage at Pins 18 of the KEY input terminal is 5 V. If it is not, check if the operation switch on the line is in failure. |

* Vdd= Approx. 5V (depending on the unit)
ex.) 0.85Vdd= 0.85 × 5 (V)
= 4.25 (V)

## DVD Section

| No. | Symptoms | Diagnosis Contents | Possible Defective Points |
|---|---|---|---|
| 1 | An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.) | Is the level at both IC5501-pin 93 (XDVDRST) and pin 1(DVD ON/OFF) on the CONTROL Assy "H" ? | µcom (CONTROL IC5501) |
| | | Check the voltage of CN901-pin 28 and 29 (VPR+8) on the DVDM Assy. | DVDM Assy CN901 |
| | | Check that the following voltages are output :<br>IC411-pin 3 : 1.8V, IC421-pin 3 : 1.8V and IC431-pin 1 : 5V on the DVDM Assy | Each regulator on the DVDM Assy |
| | | Are resonators (27MHz, 20MHz) on the DVDM Assy oscillating ? | Crystal resonator<br>(DVDM Assy X601 and X301) |
| | | Refer to contents of an FE error displayed on the FL display.<br>(SRAM defectiveness, I2C communication line defectiveness, etc.) | FRONT END IC<br>(DVDM IC301) |
| | | • Is a signal input into IC601-pin 132 (CE3) on the DVDM Assy ?<br>(Is a signal fluctuating for several seconds after the power is turned on ?)<br>→ Communication with flash ROM<br>• Are the signals input into IC602-pin 16 (SMIWE), pin 19 (SMICS0) and pin 38 (SMICLK) on the DVDM Assy ?<br>(Is a signal fluctuating ?)<br>→ Communication with flash ROM | • BACK END IC (DVDM IC601)<br>• Flash ROM (DVDM IC603)<br>• 64M SDRAM (DVDM IC602) |
| | | Is a signal output from IC603-pin 28 (CPU_OE) on the DVDM Assy?<br>(Is a signal fluctuating for several seconds after the power is turned on ?) | • BACK END IC (DVDM IC601)<br>• Flash ROM (DVDM IC603) |
| | | Is a signal input into IC5501-pin 67 (DVDACK) on the CONTROL Assy ?<br>(Is a signal fluctuating ?) | µcom (CONTROL IC5501) |
| | | Is a signal output from IC5501-pin 29 and 30 (SYS_1, 2) on the AF Assy ?<br>(Is a signal fluctuating in the range of 0-5V ?) | µcom (CONTROL IC5501) |
| | | Are the signals output from IC5501-pin 23, 24 and 25 on the CONTROL Assy? (in the range of 0-5V) | µcom (AF IC5501) – BACK END IC (DVDM IC601) communication line |
| 2 | An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.) | Check the video signal path between BACK END IC (DVDM IC601) and video-out terminal<br>(see the block diagram) | DVDM Assy<br>• Video circuit<br>• after BACK END IC (IC601) |
| 3 | A tray cannot be opened. (An opening screen is displayed on the monitor) | • Are wires of CN103 on the DVDM Assy disconnected or damaged ? | Connector / wire<br>LOADING SW (LOAB S101) |
| | | • Is a LOAD-DRVC signal reaching ?<br>• Does the voltage of CN105 pin 1 change by pressing the Inside switch. | BACK END IC (DVDM IC601)<br><br>Inside switch |

| No. | Symptoms | Diagnosis Contents | Possible Defective Points |
|---|---|---|---|
| 4 | Playback impossible (no focusing) | Are the signals output from IC101-pin 34 (F_DRV) and pin 35 (F_RTN) on the DVDM Assy ? | FTS Driver IC (DVDM IC101) |
| | | Does 650-nm LD emit light ?<br>Does a pickup lens move up / down ?<br>Does an actuator spring bend ? | Pickup |
| | | • Are plastic parts damaged? Or is a shaft detached?<br>• Is the turntable detached or tilted? | Mechanism section |
| | | Is flexible cable of CN101 on the DVDM Assy disconnected or damaged ? | Flexible cable / connector |
| | | Is signal output from IC301-pin 33 (FACT) on the DVDM Assy ?<br>(Device control of about 2.6 V is output usually. It is fluctuated by about ± 100 mV with focus up / down.) | FRONT END IC (DVDM IC301) |
| 5 | Playback impossible (Spindle does not turn) | Are the signals output from IC101-pin 12 (A3), pin 13 (A2) and pin 14 (A1) on the DVDM Assy ?<br>Is pin 41 fixed LOW and is pin 38 fixed HIGH ? | FTS Driver IC (DVDM IC101) |
| | | Is there any part detached from the spindle motor?<br>Or Is there any foreign object lodged in it? | Mechanism section<br>(Spindle motor) |
| | | Are wires of CN105 (DVDM Assy) disconnected or damaged ? | Flexible cable / connector |
| | | Is signal output from IC301-pin 44 (SPDL_PDM) on the DVDM Assy ? | FRONT END IC (DVDM IC301) |
| 6 | Playback impossible (Playback stops) | Does 650-nm LD deteriorate ?<br>If the voltage at both ends of R201 on the DVDM Assy is 0.7 V or more, the 650-nm LD is definitely deteriorated. | 650-nm LD deteriorated.<br>(When playback of a DVD is impossible) |
| | | Does 780-nm LD deteriorate ?<br>If the voltage at both ends of R211 on the DVDM Assy is 1.5 V or more, the 780-nm LD is definitely deteriorated. | 780-nm LD deteriorated.<br>(When playback of CD is impossible) |
| | | Is there abnormality in FG waveform ? | FG output : FTS Driver IC (DVDM IC101) |
| | | Are there scratches or dirt on the disc ? | Disc |
| 7 | Picture disturbance during playback (block noise, freeze, other) | Are there scratches or dirt on the disc ? | Disc |
| | | Is there a problem with the format of the disc? | Disc |
| 8 | No sound (Picture is normal) | | |
| | | Is signal output from DOUT signal (CN901-pin 21) on the DVDM Assy ? | DVDM CN901-pin 21 |

## 7.1.10 DSP TROUBLE SHOOTING

### Detectable DSP Errors

The following conditions are assumed,
in order to eliminate causes other than "DSP-assy" and "between DSP-assy and microcomputers".
• Electric power is correctly supplied to DSP-assy.
• The SPDIF signal is coming to the input port of DIR ("COAX IN" RX0 & "OPT IN" RX3 & "DVD" RX7).
• There is no audio output from DSP-assy, or audio output is unusual.
Check the signal route by referring the connection diagram between U-com and DSP module IC (next page).

* "U", "M" display below is a sample.
Those character display ON/OFF depends on the state.

**• ERR_0 : –Cannot receive data from DIR–** FL DIRERR-UM
→Communication fault has occurred somewhere between DIR (PinNo.32 CDTO)–Level Shifter (IC8702)– µ-com (PinNo.80 DIRDO).
→Communication fault has occurred somewhere between the µ- com-port (*1) which has sent the signal and each IC.

**• ERR_1 : –Cannot receive data from DSP–** FL DSPERR-UM
→Communication fault has occurred somewhere between DSP (PinNo.144 DSDO)–Level Shifter (IC8702)–µ-com (PinNo.50 DSPDO).
→Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC.
→Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_2 : –There is no return value of HREQ.–** FL HREQ -UM
→Communication fault has occurred somewhere between DSP (PinNo.3 HREQ)–Level Shifter (IC8702)–µ-com (PinNo.82 DSPHREQ).
→Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC.
→Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_3 : –ERR information from DSP–** FL DSP NG-UM
→Communication fault has occurred somewhere between the µ-com-port (*1) which has sent the signal and each IC.
(especially the fault inside DSP)
→Communication fault has occurred somewhere between the DIR and DSP.

**• ERR_4 : –DECOMUTE continues being LOW(MUTE).–** FL DMUTE -M
→Communication fault has occurred somewhere between DSP (PinNo.21 PB12)–Level Shifter (IC8702)–µ-com (PinNo.86 DECMUTE).
→Communication fault has occurred somewhere between the É com-port (*1) which has sent the signal and each IC.
→Communication fault has occurred somewhere between the DIR and DSP.

Although the following are not errors, they are displayed separately and are helpful in finding a solution.
**• INFO_0 : –DIRERR is HIGH (UNLOCK) in digital function.–** FL DSP OK-UM
If DIRERR continues being HIGH (UNLOCK) without the above-mentioned error display.
→Communication fault has occurred in somewhere between DIR (PinNo.36 INT0)–Level Shifter (IC8702)–µ-com (PinNo.77 DIRERR).
→Check that the external set and this model is properly connected by the digital cable when selecting LINE2 (External Digital) function.

**• INFO_1 : –DSPMUTE is LOW (MUTE).–** FL DSP OK-M
If DSPMUTE continues being LOW (MUTE) without the above-mentioned error display.
→Communication fault has occurred somewhere between µ-com (PinNo.86 DSPMUTE)–connector (CN8011 and CN8012 No.19 MUTEOUT).

**• INFO_2 : –Loading 88.2kHz/96kHz PCM–** FL DSP OK-9
DSP function is limited when this information is displayed.

Notes :
Only the high priority error (near to ERR_0) is displayed when the multiplel errors have occurred.

When the analog audio output of a DSP module is unusual but the above error information is not displayed, the fault is probably in the CODEC IC (IC8401) and the peripheral circuits.
As the µ-com has not received data from the CODEC IC, it cannot detect the fault and display the error information.

*1 : μ-com-port which has sent the signal to IC

| IC5501 μ-com port | | | IC8201 DIR port | | IC8401 CODEC port | |
|---|---|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name | Pin No. | Pin Name |
| No.51 | DSPCLK | → | No.34 | CCLK | No.42 | CCLK |
| No.49 | DSPDI | → | No.33 | CDTI | No.43 | CDTI |
| No.79 | DIRCS | → | No.35 | CSN | No.41 | CSN |
| No.78 | DIRRST | → | No.31 | PDN | No.17 | PDN |

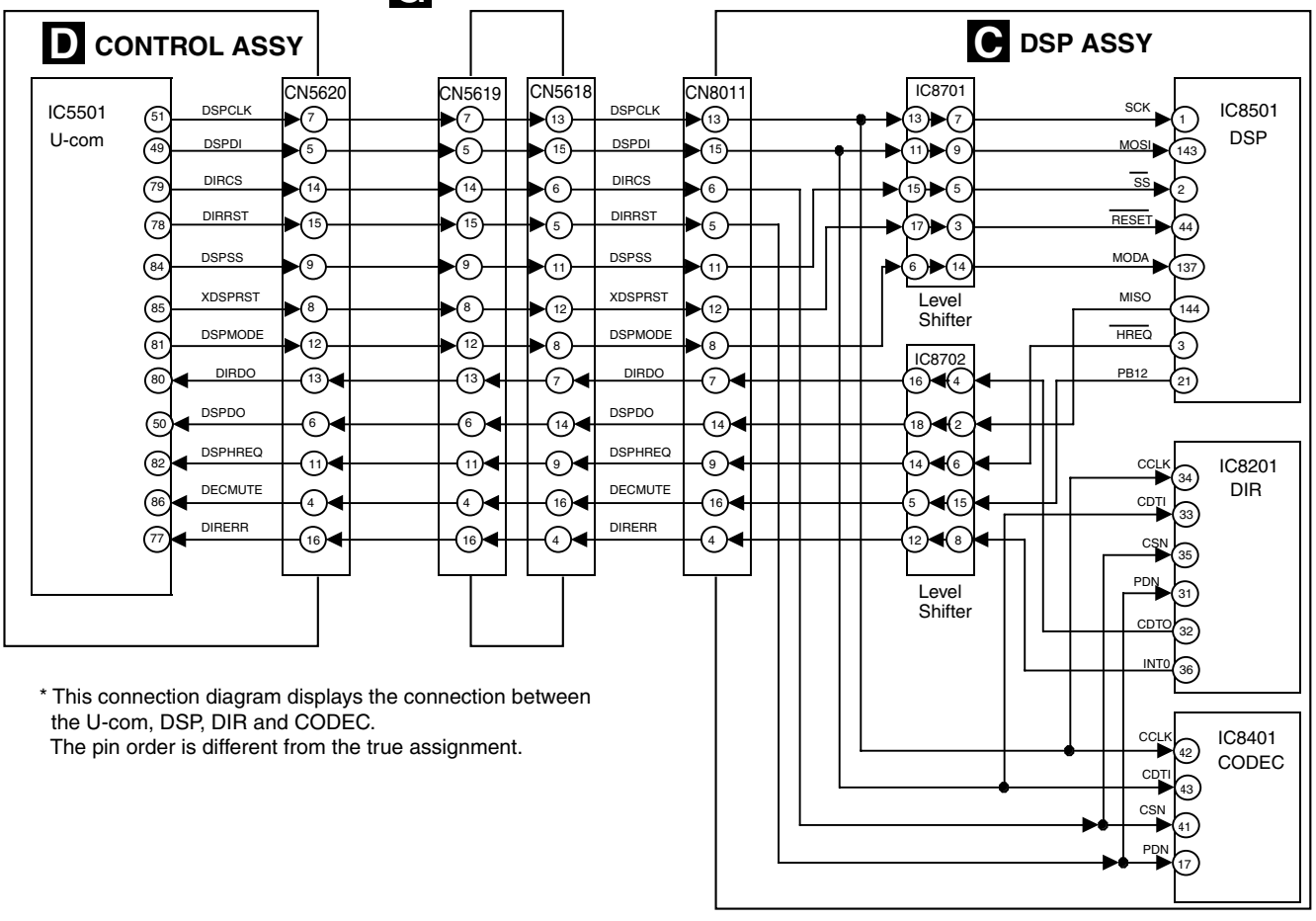
| IC5501 μ-com port | | | IC8501 DSP port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.51 | DSPCLK | → | No.1 | SCK |
| No.49 | DSPDI | → | No.143 | MOSI |
| No.84 | DSPSS | → | No.2 | $\overline{SS}$ |
| No.85 | XDSPRST | → | No.44 | $\overline{RESET}$ |
| No.81 | DSPMODE | → | No.137 | MODA |

| IC5501 μ-com port | | | IC8201 DIR port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.80 | DIRDO | ← | No.32 | CDTO |
| No.77 | DIRERR | ← | No.36 | INT0 |

| IC5501 μ-com port | | | IC8501 DSP port | |
|---|---|---|---|---|
| Pin No. | Pin Name | | Pin No. | Pin Name |
| No.50 | DSPDO | ← | No.144 | MISO |
| No.82 | HREQ | ← | No.3 | HREQ |
| No.86 | DECMUTE | ← | No.21 | PB12 MUTE |

## ■ CONNECTION DIAGRAM

**G TRADE 3 ASSY**




* This connection diagram displays the connection between the U-com, DSP, DIR and CODEC.
The pin order is different from the true assignment.

## 7.1.11 DISASSEMBLY

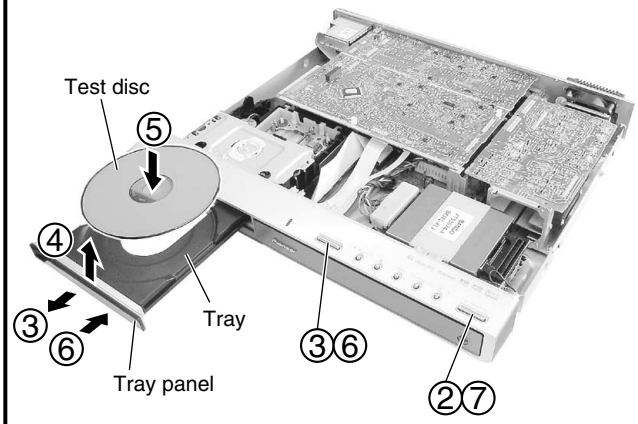
**Note 1 :** Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

**Note 2 :** For performing the diagnosis shown below, the following jig cables for service are required:
• GGD1266 (×2) • GGD1222 • GGD1160

## Diagnosis of the PCBs

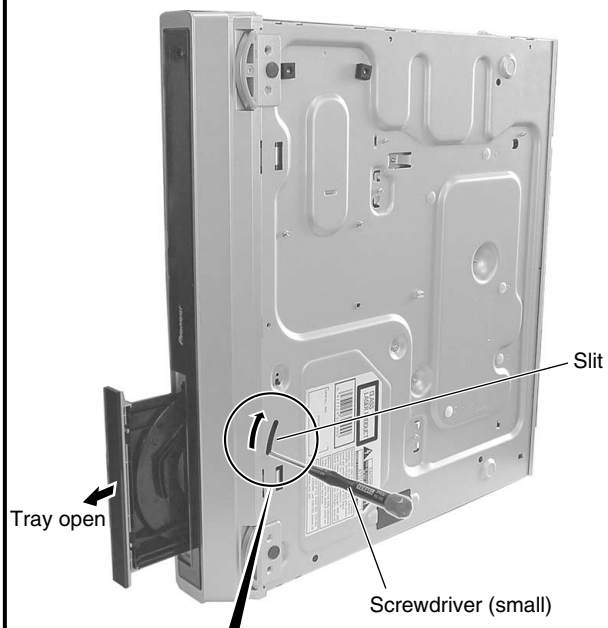
### 1 Bonnet and Tray panel

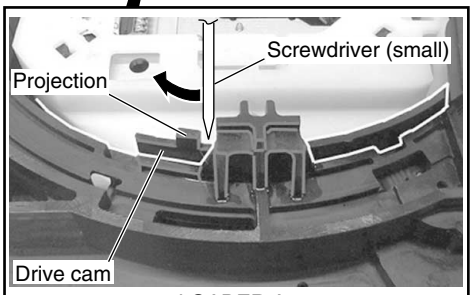
① Remove the bonnet by removing the seven screws.
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ OPEN/CLOSE button to open the tray.
④ Remove the tray panel.
⑤ Set the test disc.
⑥ Press the ⏏ OPEN/CLOSE button to close the tray. (The test disc is clamped.)
⑦ Press the ⏻ STANDBY/ON button to turn off the power.
⑧ Pull out the power cord from the outlet.




**• How to open the tray when the power cannot be on**

Insert a screwdriver (small) into the slit located at the bottom of the unit, and slide the projection of the drive cam in the 01 LOADER Assy in the direction of the arrow, as indicated in the photo. If the tray pops out a little, fully pull it out by a hand.



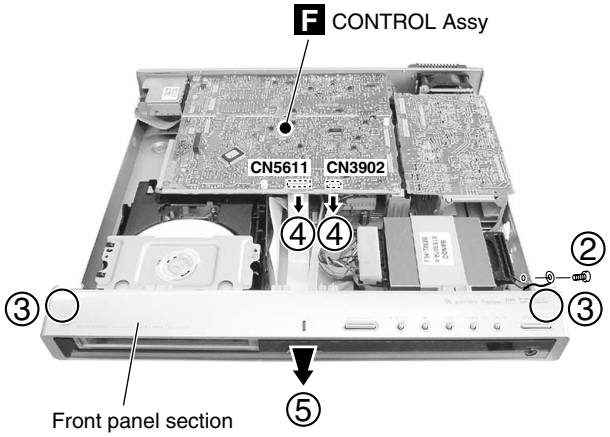

01 LOADER Assy

● **Bottom view**

## 2 Front panel section

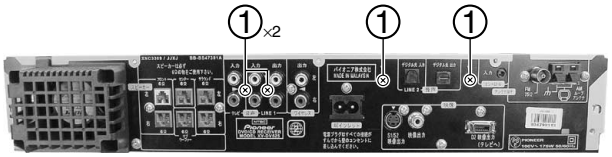
① Remove the two screws.
② Remove the one screw.
③ Unhook the four hooks.
④ Disconnect the two flexible cables.
⑤ Remove the front panel section.

● **Bottom view**




## 3 CONTROL Assy

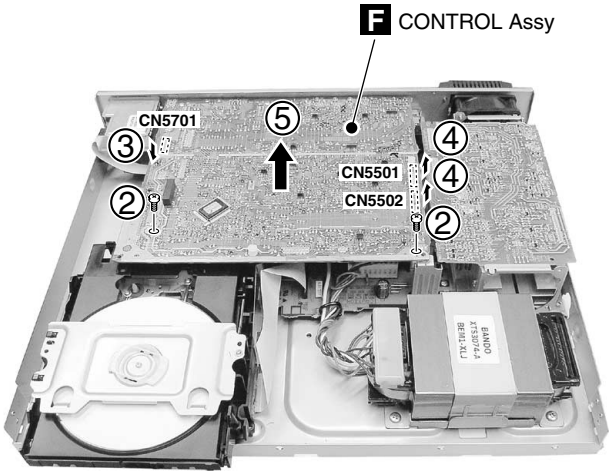
① Remove the four screws.




● **Rear view**

Note : This photograph may show a different model.
however, the method for disassembly is the same.

② Remove the two screws.
③ Disconnect the one flexible cable.
④ Disconnect the two connectors.
⑤ Remove the CONTROL Assy.



⑥ Reattatch the front panel section.

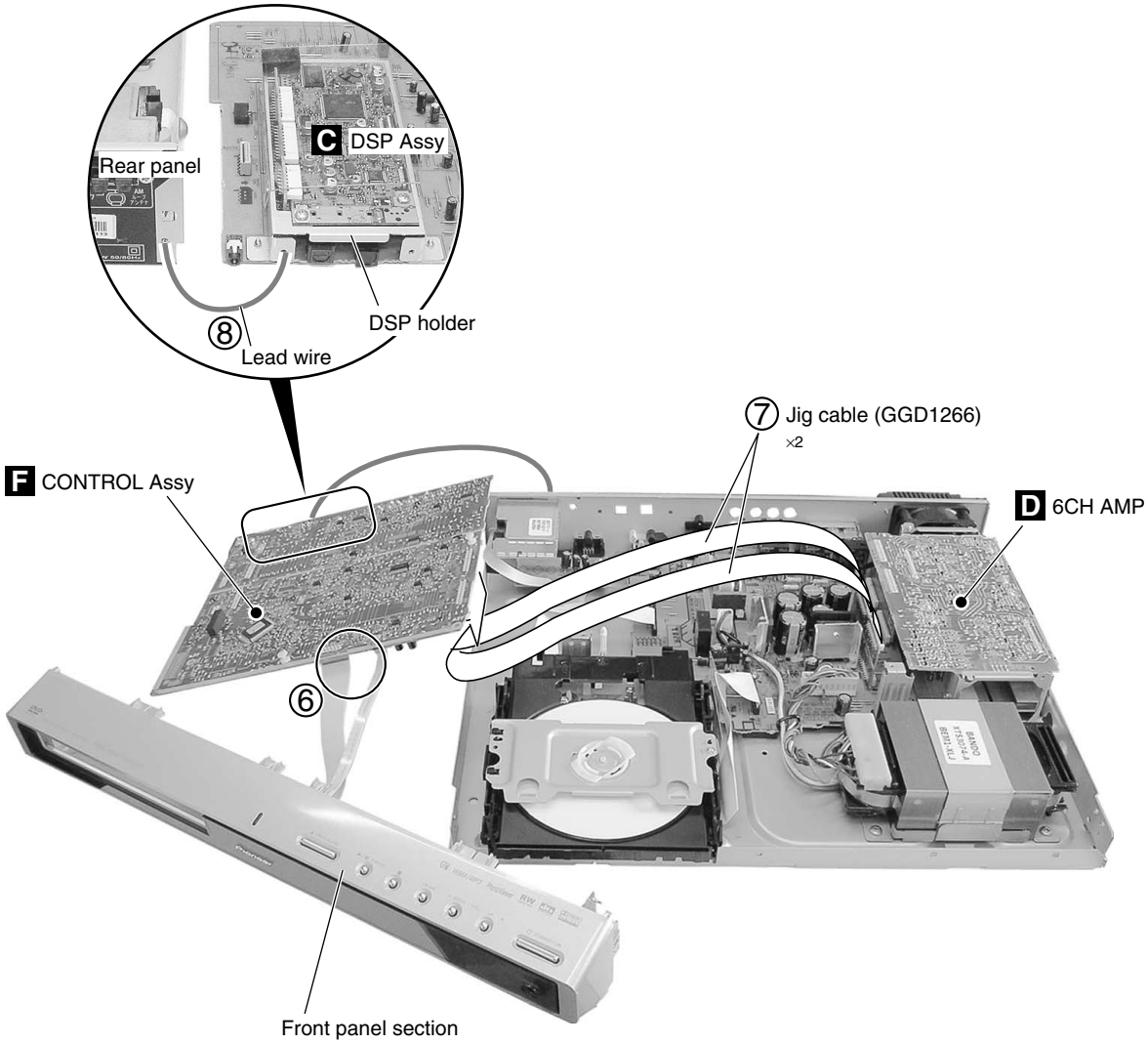
⑦ Connect the two jig cables.

⑧ Connect a lead wire (for ground) between the DSP holder (on the DSP Assy) and rear panel (chassis).

**Caution :**
If the lead wire is not connected and the power is turned on, following parts on the DSP Assy may be damaged.

IC8702 : TC74VHCT244AFT
IC8401 : AK4529VQ
R8415 : 4.7Ω

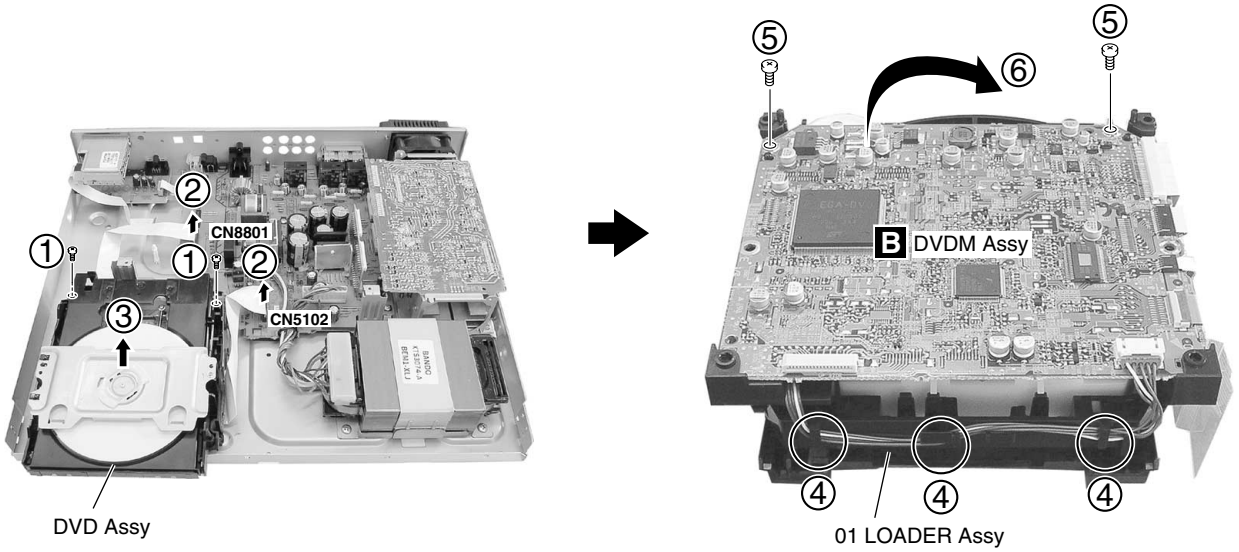
If the above parts are damaged, the audio signal can not be output.



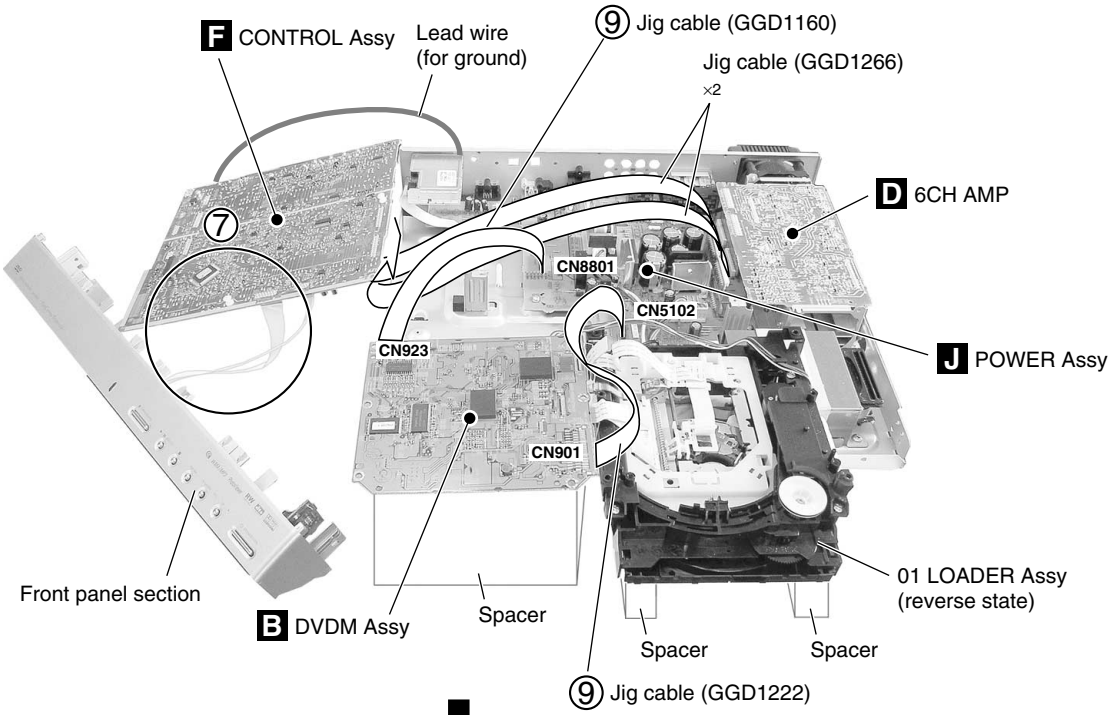

**Diagnosis**

## 4 DVDM Assy

① Remove the two screws.
② Remove the two flexible cables.
③ Remove the DVD Assy.
④ Unhook the three hooks.
⑤ Remove the two screws.
⑥ Remove and reverse the DVDM Assy.




⑦ Reattatch the CONTROL Assy and front panel section. (See Step 3.)
⑧ Arrange the 01 LOADER Assy and the DVDM Assy as shown in the photo below.
⑨ Connect the two jig cables.




**Diagnosis**

## Removing the Traverse Mecha. Assy-S and Pickup Assy-S

### 1 Loading Mecha. Assy

① Remove the bridge by removing the one screw.

② Pull out the tray, then remove it by pressing the hook.

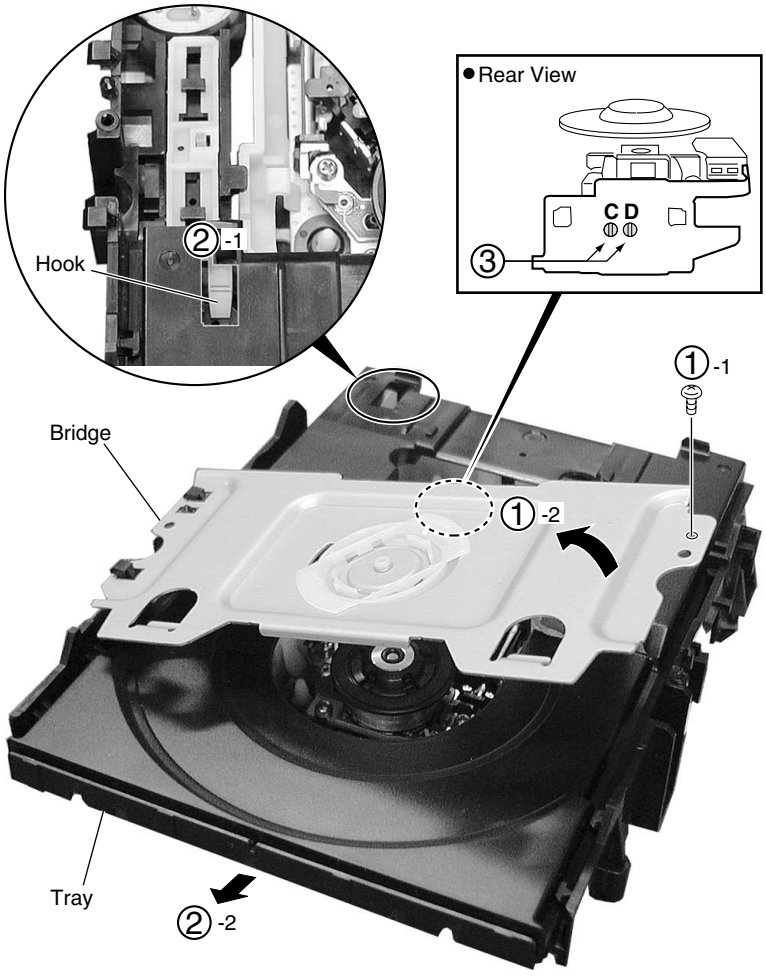
③ Short-circuit two points of C and D by soldering. (*1)

**Note:** After replacement, connect the flexible cable, then remove the soldered joint (open).

④ Remove the four connectors from the Loading Mecha. Assy.

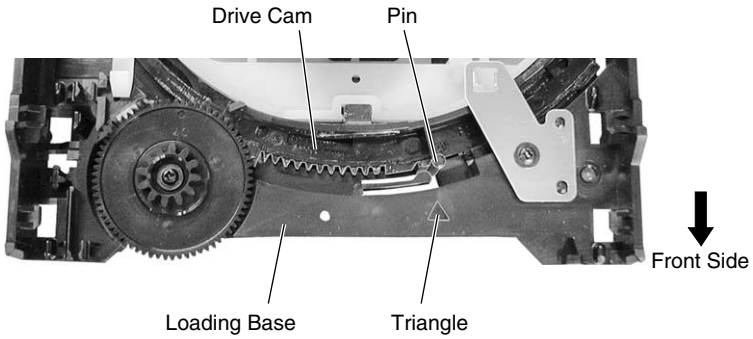
⑤ Remove the four screws that secure the Loading Mecha. Assy to the unit.

*1 : To protect from the electrostatic resisting pressure.



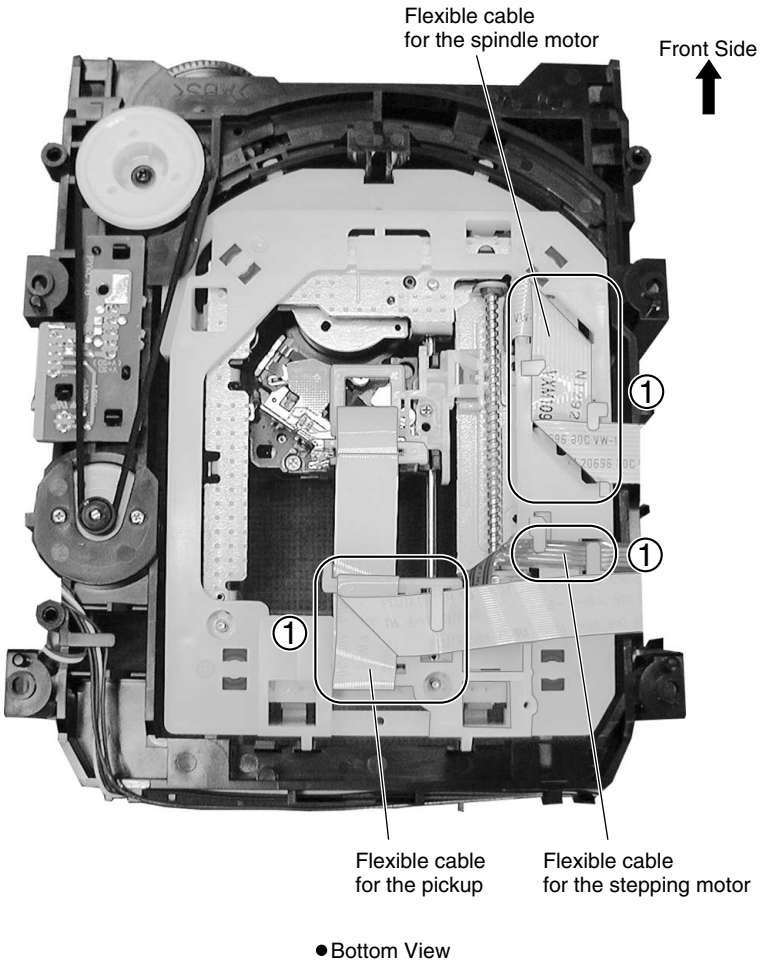

### Note when reinserting the Tray

When reinserting the Tray, first align the triangle printed on the Loading Base and the pin of the Drive Cam, then insert the Tray.



## 2 Traverse Mecha. Assy-S

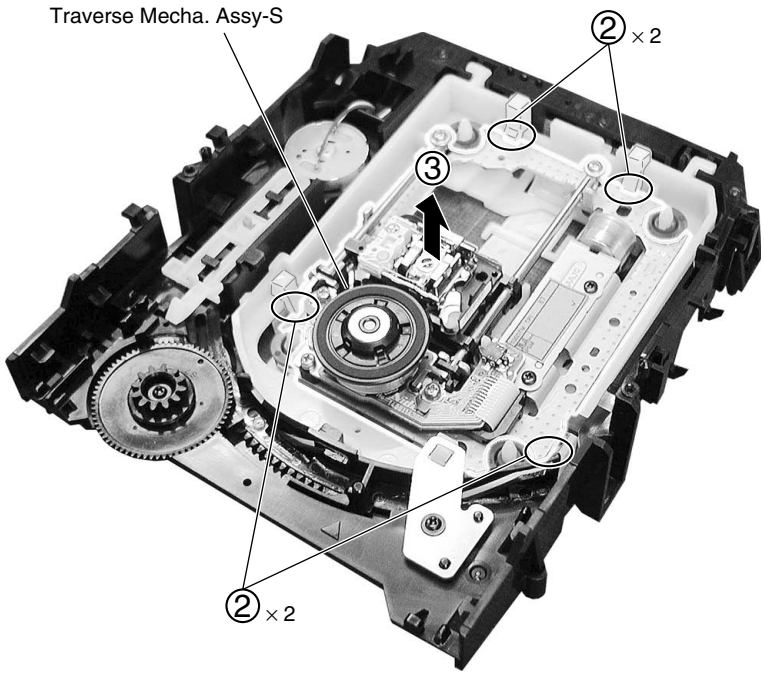
① Dislodge the flexible cables from their packaged placement.




● Bottom View

② Remove the four hooks.

③ Remove the Traverse Mecha. Assy-S.

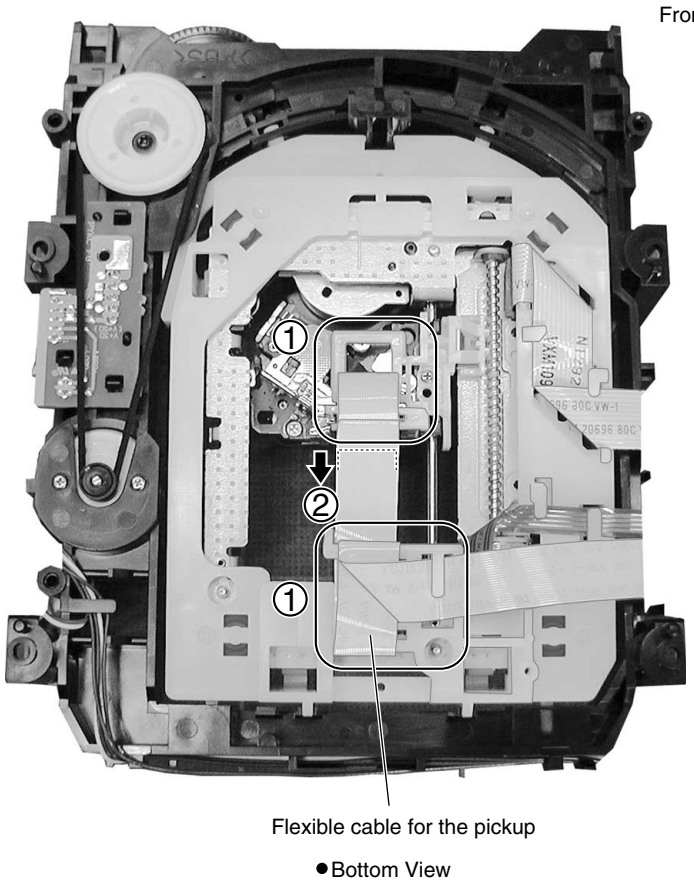


## 3 Pickup Assy-S

**Note:** The Pickup Assy-S can be removed without removing the Traverse Mecha. Assy-S. (shown as Step 2.)

① Dislodge the flexible cable for the pickup from its packaged placement.

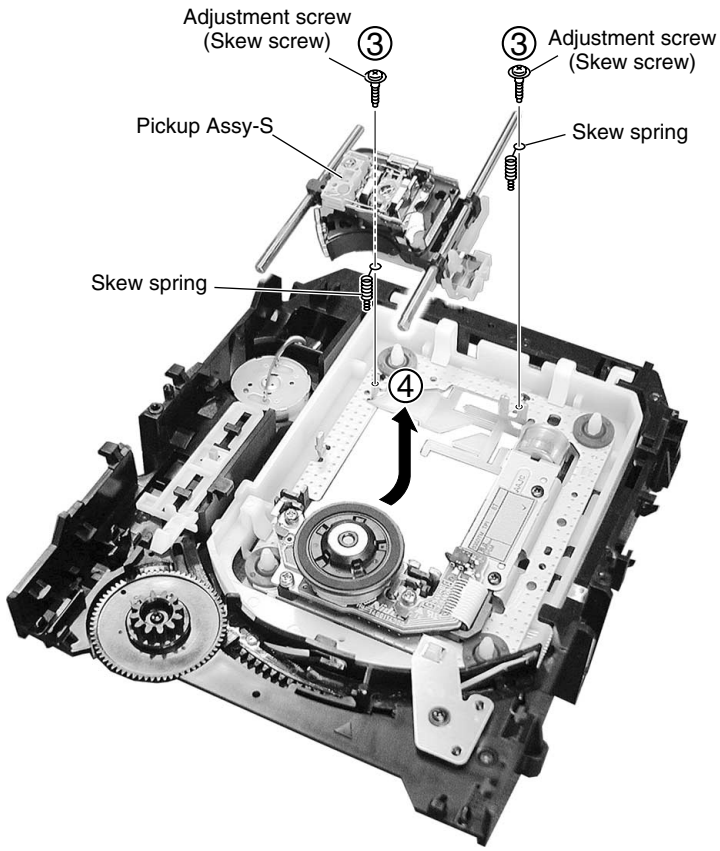
② Remove the flexible cable for the pickup.




● Bottom View

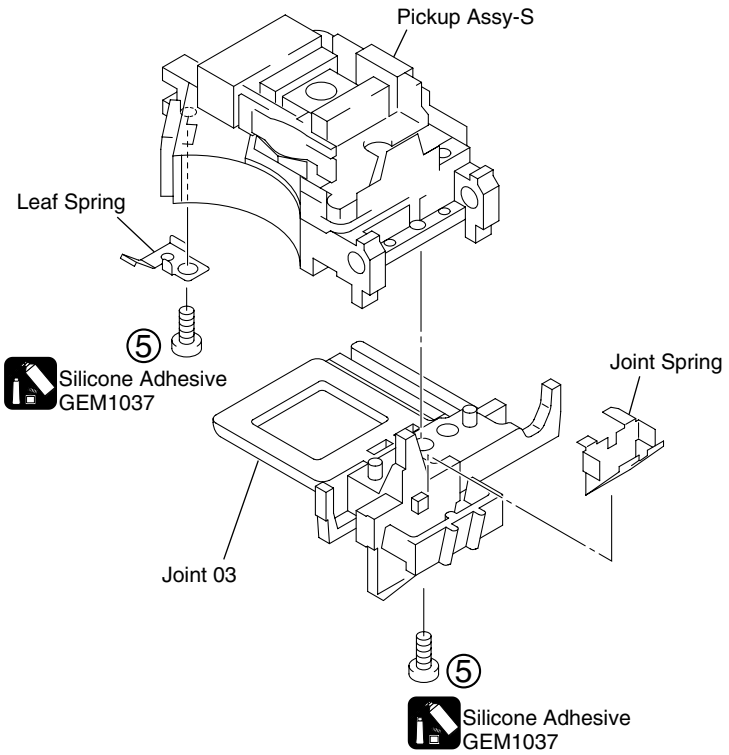
③ Remove the two skew screws and two skew springs.

④ Remove the Pickup Assy-S.



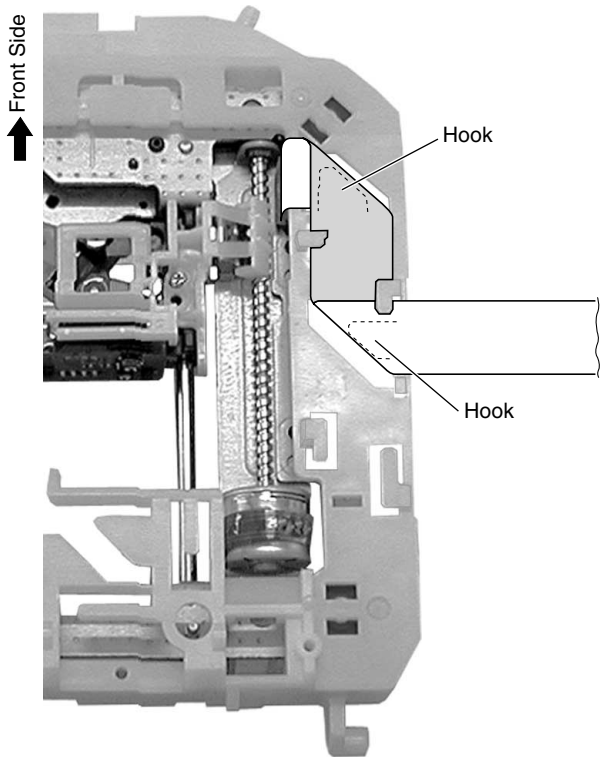
⑤ Remove the two screws.

**Note:** The screws are secured with epoxy. Make sure to apply epoxy after reattaching the screws.




**Arrangement of the flexible cable for the spindle motor**

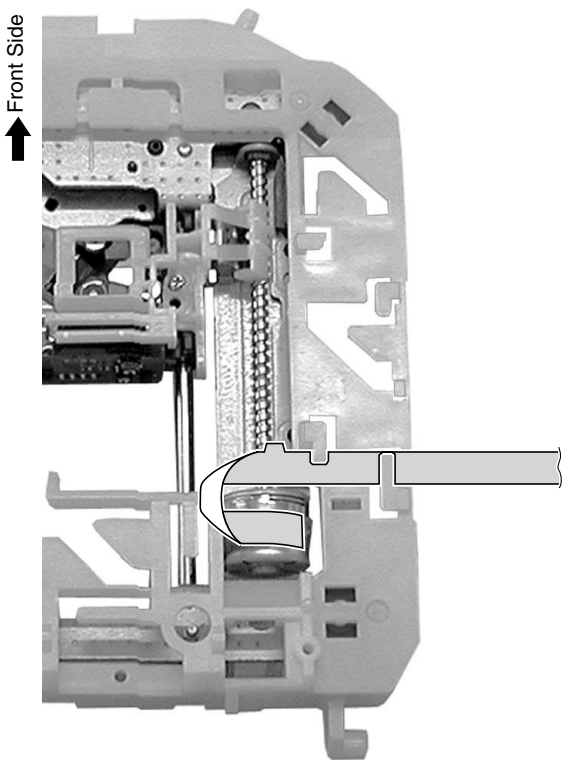
: Conductive surface




● Bottom View

**Arrangement of the flexible cable for the stepping motor**

: Conductive surface




● Bottom View

## Arrangement of the flexible cable for the pickup

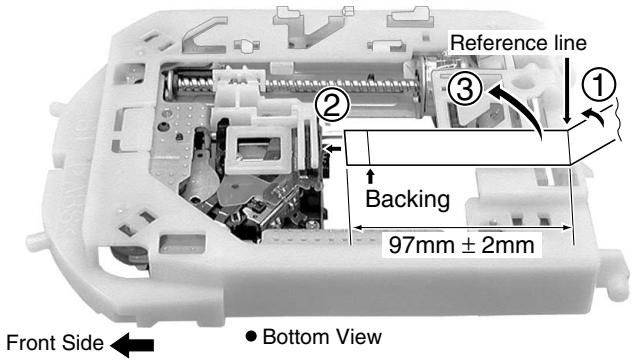
: Conductive surface

**Note:**
Be sure to move the Pickup Assy-S to the innermost perimeter.

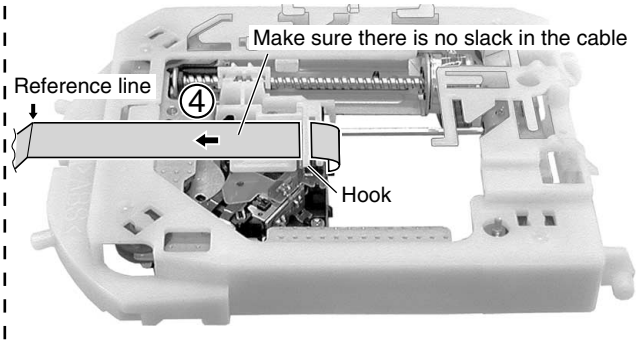
① Fold the flexible cable inward at the position of the reference line

② Attach the flexible cable of the pickup to the connector

③ Fold the flexible cable of the pickup with the backing inward

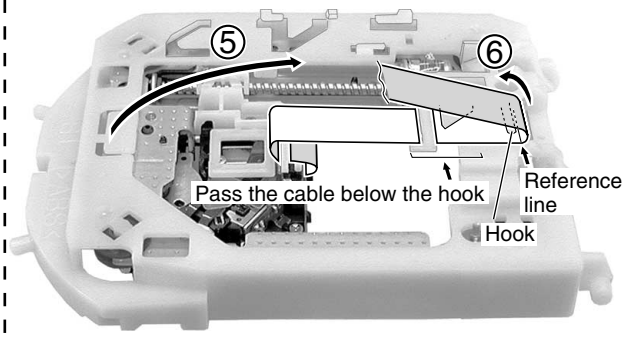



④ Pass the flexible cable through the hook not allowing any slack

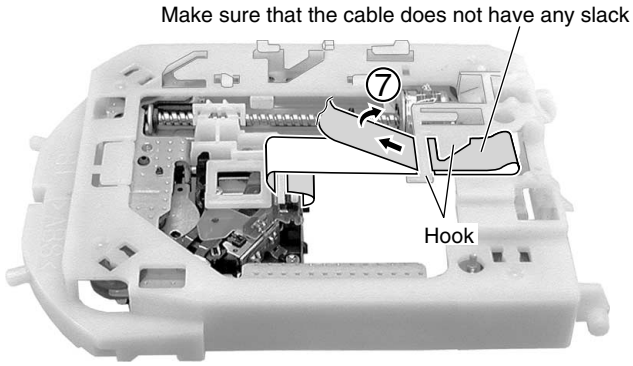



⑤ Fold the flexible cable as indicated in the photo

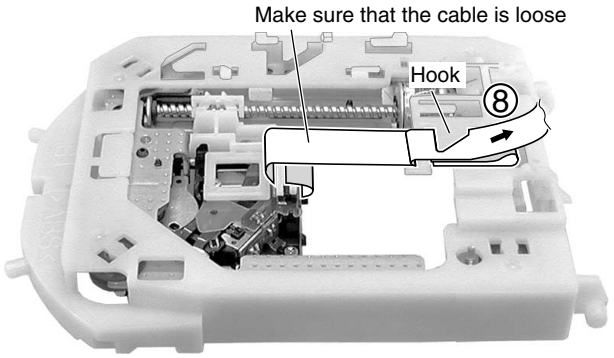
⑥ Hook the part folded in Step ① to the hook



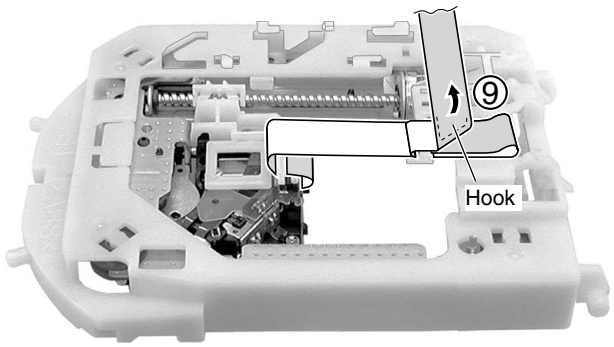

⑦ Pass the flexible cable below the hook, and fold it back




⑧ Fold the flexible cable back at the hook




⑨ Fold the flexible cable along the hook



# 7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

• **List of IC**

PDC114B

## ■ PDC114B (CONTROL ASSY : IC5501)

• System Control Microcomputer

### ● Pin Functions

| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 1 | PA3/WR# | DVDON/OFF | O | Control power supply for DVD module |
| 2 | PA4/RD# | HPDET | I | Detect to insert headphone |
| 3 | PA5/RS | NC | O | |
| 4 | P70 / INT0 / T0LCP / AN8 | ACPULSE | I | AC PULSE input (Interruption) |
| 5 | P71 / INT1 / T0HCP / AN9 | NC | O | |
| 6 | P72 / INT2 / T0IN | RDSCLK | I | Clock input from RDS decoder (Interruption 2, without RDS : Low output) |
| 7 | P73 / INT3 / T0IN | REMOCON | I | REMOCON signal input (Interruption 3) |
| 8 | RES# | XRESET | I | μ-com reset input |
| 9 | XT1 / AN10 | XT1 | – | Subclock (connect to VDD when no use) |
| 10 | XT2 / AN11 | XT2 | – | Subclock (leave open when no use, and set the bit 6 of OCR SFR) |
| 11 | VSS1 | VSS1 | – | |
| 12 | CF1 | CF1 | – | Main Clock (connect to VDD when no use) |
| 13 | CF2 | CF2 | – | Main Clock (leave open when no use) |
| 14 | VDD1 | VDD1 | – | |
| 15 | P80 / AN0 | SIMUKE | I | Destination distinction input |
| 16 | P81 / AN1 | MODEL | I | model distinction input |
| 17 | P82 / AN2 | VDET | I | DVD 3.3V detection input |
| 18 | P83 / AN3 | KEY1 | I | Key1 input |
| 19 | P84 / AN4 | NC | O | NC |
| 20 | P85 / AN5 | NC | O | NC |
| 21 | P86 / AN6 | NC | O | |
| 22 | P87 / AN7 | XPROTECT | I | Protection and Fan Error detection input |
| 23 | P10/SO0 | SDATA | O | System bus data output (AMP side output) |
| 24 | P11 / SI0 / SB0 | MDATA | I | System bus data input (AMP side input) |
| 25 | P12 / SCK0 | SCLK | I | System bus clock input |
| 26 | P13 / SO1 | SR+Tx | O | UART Tx of SR+ function |
| 27 | P14 / SI1 / SB1 | SR+Rx | I | UART Rx of SR+ function |
| 28 | P15 / SCK1 | NC | O | |
| 29 | P16/T1PWML | SYSCS2 | O | Chip select 2 for system bus (to DVD module) |
| 30 | P17/T1PWMH/BUZ | SYSCS1 | O | Chip select 1 for system bus (to DVD module) |
| 31 | PE0 | XHPMUTE | O | HP MUTE ON/OFF |
| 32 | PE1 | XRECMUTE | O | REC OUTPUT MUTE ON/OFF |
| 33 | PE2 | XMUTEC | O | Cch MUTE ON/OFF |
| 34 | PE3 | RYR | O | REAR RELAY ON/OFF |
| 35 | PE4 | RYFSC | O | FRONT/SW/CENTER RELAY ON/OFF |
| 36 | PE5 | (3/5CONVERT) | O | 3/5 v convert control for SR+ function |
| 37 | PE6 | TIMERLED | O | Control TIMER LED |
| 38 | PE7 | LEVELSHIFT | O | VOL 0 to 5 : H |
| 39 | VSS4 | VSS4 | | |
| 40 | VDD4 | VDD4 | | |

| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 41 | PF0 | ATT10dB | O | Control ATT 10dB |
| 42 | PF1 | ATT6dB | O | Control ATT 6dB |
| 43 | PF2 | STEST | I | Set TEST MODE for Service |
| 44 | PF3 | UTEST | I | Set UNIT CHECK for checker |
| 45 | PF4 | DTSDMX | O | Cntrol of gain-up for dts down-mix |
| 46 | PF5 | SWFMX | O | Control for subwoofer mix |
| 47 | PF6 | NC | I | (When this port don't use , please connect GND) |
| 48 | PF7 | NC | I | (When this port don't use , please connect GND) |
| 49 | SI2P0/SO2 | DSPDI | O | Data output to DSP (MOTOROLA) and DIR, SIO2: LSB first |
| 50 | SI2P1/SI2/SB2 | DSPDO | I | Data input from DSP (MOTOROLA) |
| 51 | SI2P2/SCK2 | DSPCLK | O | Clock output to DSP (MOTOROLA) and DIR |
| 52 | SI2P3/SCK20 | TXCE | O | Chip enable for tuner LSI |
| 53 | PWM1 | NC | | NC |
| 54 | PWM0 | NC | | NC |
| 55 | VDD2 | VDD2 | | |
| 56 | VSS2 | VSS2 | | |
| 57 | P00 | XFLRST | O | Reset for FL driver |
| 58 | P01 | FLCS | O | Chip enable for FL driver |
| 59 | P02 | FLCLK | O | Clock for FL driver |
| 60 | P03 | FLDAT | O | Data for FL driver (serial data input) |
| 61 | P04 | TXCLK | O | Clock for tuner LSI |
| 62 | P05 | TXODATA | O | Data for tuner LSI |
| 63 | P06 | NC | O | NC |
| 64 | P07 | RDSPOW | O | Control power supply of RDS (L : POWER ON) |
| 65 | P20/INT4/T1IN | RDSDATA | I | Input RDS data |
| 66 | P21/INT4/T1IN | TXIDATA | I | Input data from tuner LSI |
| 67 | P22/INT4/T1IN | DVDACK | I | Ackknowlegement from DVD MODULE (Interruption 4) |
| 68 | P23/INT4/T1IN | XVMUTE | O | VIDEO MUTE request to DVD MODULE |
| 69 | P24/INT5/T1IN | DVDMUTE | I | Request of MUTE from DVD MODULE (Interruption 5) |
| 70 | P25/INT5/T1IN | NC | O | NC |
| 71 | P26/INT5/T1IN | TVSEL | O | TV AUDIO INPUT SELECT |
| 72 | P27/INT5/T1IN | XWMUTE | O | WIRE LESS MUTE request |
| 73 | P30 | WSELA | O | WIRE LESS OUTPUT SELECT A |
| 74 | P31 | INPUTSELB | O | AUDIO INPUT SELECT B |
| 75 | P32 | INPUTSELA | O | AUDIO INPUT SELECT A |
| 76 | P33 | XTL0 | O | Selection X'tal to DIR |
| 77 | P34 | DIRERR | I | LOCK/UNLOCK from DIR |
| 78 | P35 | DIRRST | O | Reset to DIR /CODEC |
| 79 | P36 | DIRCS | O | Chip select to DIR/CODEC |
| 80 | PB7/D7 | DIRDO | I | Data input from DIR/CODEC |

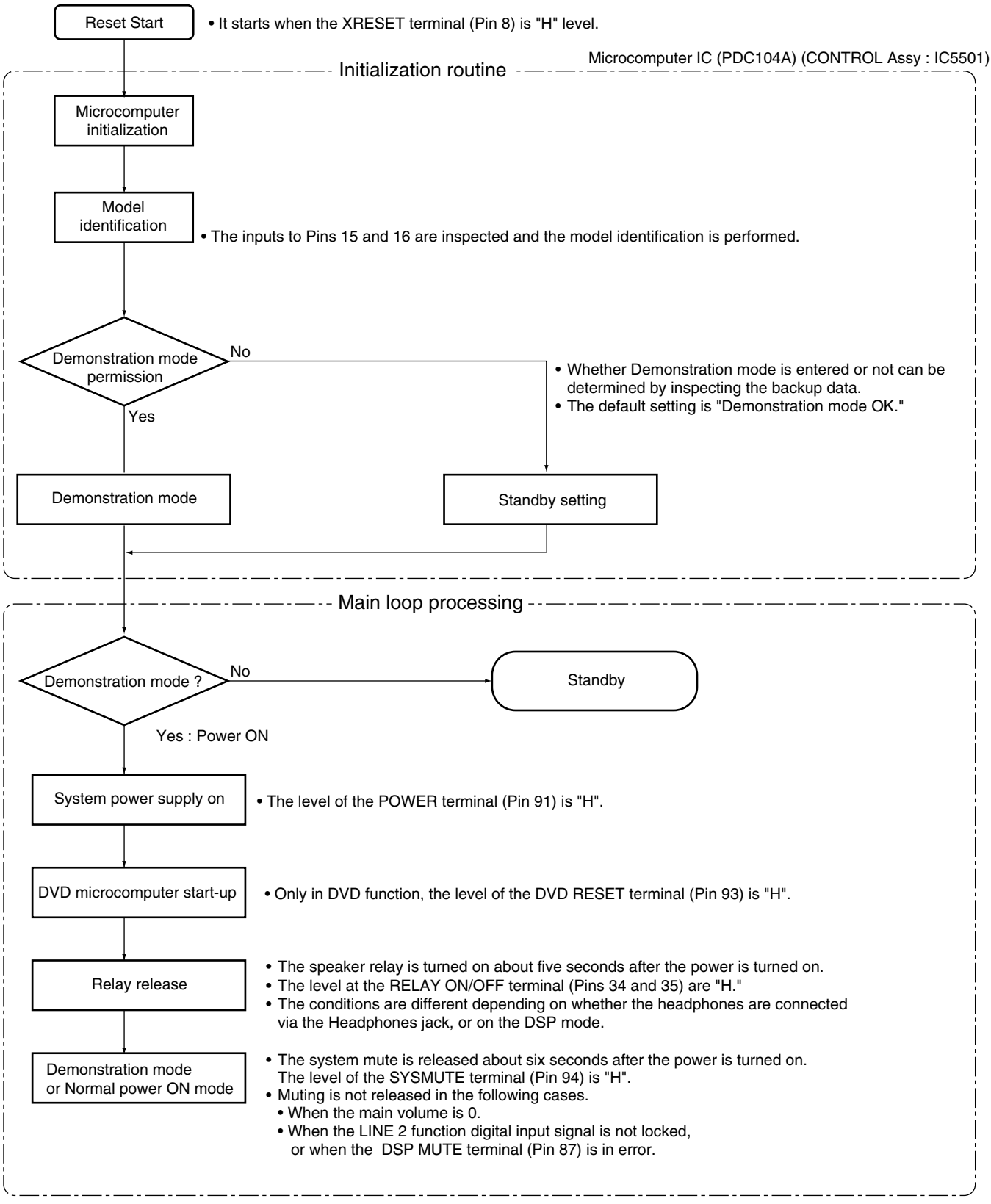
| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 81 | PB6/D6 | DSPMODE | O | MODE selection (ROM/RAM) to DSP (MOTOROLA) |
| 82 | PB5/D5 | DSPHREQ | I | Error detection from DSP (MOTOROLA) |
| 83 | PB4/D4 | NC | O | |
| 84 | PB3/D3 | DSPSS | O | Slave selection to DSP (MOTOROLA) |
| 85 | PB2/D2 | XDSPRST | O | RESET to DSP (MOTOROLA) MODULE |
| 86 | PB1/D1 | DECMUTE | I | Detection of 1st DSP boot success from DSP MODULE |
| 87 | PB0/D0 | XDSPMUTE | O | MUTE requeat to DSP MODULE |
| 88 | VSS3 | VSS3 | – | |
| 89 | VDD3 | VDD3 | – | |
| 90 | PC7/A7 | PASSANDREW | O | Control for bypass Andrew circuit (Tuner test for Europe/Korea model) |
| 91 | PC6/A6 | SYSPOW | O | Control power supply of system |
| 92 | PC5/A5 | XTVMUTE | O | Control mute of TV(EURO) |
| 93 | PC4/A4 | XDVDRST | O | RESET to DVD MODULE |
| 94 | PC3/A3 | XSYSMUTE | O | Control mute of system |
| 95 | PC2/A2 | (VOLMUTE) | O | (Contorol mute of E-vol IC) |
| 96 | PC1/A1 | VOLCLK | O | Clock for E-vol IC |
| 97 | PC0/A0 | VOLDATA/CE | O | Data/CE for E-vol IC |
| 98 | PA0/CS2# | FLASHE/D | – | for FLASH writing |
| 99 | PA1/CS1# | FLASHDO | – | for FLASH writing |
| 100 | PA2/CS0# | FLASHCLK | – | for FLASH writing |

- Port0 (P00-P07) can be selected for input or output by each 4 bits (P00-P03,P04-P07). Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port1 (P10-P17) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1bit in option.
- Port2 (P20-P27) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port3 (P30-P36) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port7 (P70-P73) can be selected for input or output by each 1 bit. Set for input when reset.
- Port8 (P80-P87) can be selected for input or output by each 1 bit. Set for input when reset.
- PortA (PA0-PA5) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortB (PB0-PB7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortC (PC0-PC7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortE and PortF can be selected for input or output by each 2 bits.

- In case of without RDS, it is best that RDSDATA and RDSCLK are assigned as I/O port which can be set output and output low level.

# 7.3 EXPLANATION

## 7.3.1 SEQUENCE AFTER POWER ON


Reset Start
• It starts when the XRESET terminal (Pin 8) is "H" level.
Microcomputer IC (PDC104A) (CONTROL Assy : IC5501)
Initialization routine
Microcomputer initialization
Model identification
• The inputs to Pins 15 and 16 are inspected and the model identification is performed.
Demonstration mode permission
No
Yes
• Whether Demonstration mode is entered or not can be determined by inspecting the backup data.
• The default setting is "Demonstration mode OK."
Demonstration mode
Standby setting
Main loop processing
Demonstration mode ?
No
Standby
Yes : Power ON
System power supply on
• The level of the POWER terminal (Pin 91) is "H".
DVD microcomputer start-up
• Only in DVD function, the level of the DVD RESET terminal (Pin 93) is "H".
Relay release
• The speaker relay is turned on about five seconds after the power is turned on.
• The level at the RELAY ON/OFF terminal (Pins 34 and 35) are "H."
• The conditions are different depending on whether the headphones are connected via the Headphones jack, or on the DSP mode.
Demonstration mode or Normal power ON mode
• The system mute is released about six seconds after the power is turned on. The level of the SYSMUTE terminal (Pin 94) is "H".
• Muting is not released in the following cases.
• When the main volume is 0.
• When the LINE 2 function digital input signal is not locked, or when the DSP MUTE terminal (Pin 87) is in error.

- If no pulse is input to the AC terminal (Pin 4) for about 60 msec when the microcomputer is in Memory Backup mode, it will not do any processing.
- The unit will recover from Memory Backup mode if a reset command is input to the XRESET terminal (Pin 8).

## 7.3.2 PROTECTION CIRCUIT

If the TIMER LED on the front panel flashes, check the protection circuit.
Note: If the protection circuit activates, the unit will not recover for 60 seconds even if the AC power cord is disconnected then reconnected.
If you activate Service Test mode, the protection circuit becomes invalid, which makes diagnosis easy. (To activate Service Test mode, while connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord.)
There are three types of operations for the protection circuit, which are indicated on the FL display when Service Test mode is entered:

PRTCT WNG: The unit was shut down because of an abnormality in the AMP system. (The PROTECT line operates at the MID level.)
PRTCT ERR: The unit was shut down because of a failure in the AMP system. (The PROTECT line operates at the LO level.)
DVD PRTECT: The unit was shut down because of a failure in the DVD system. (The VDET line operates at the HI or LO level.)

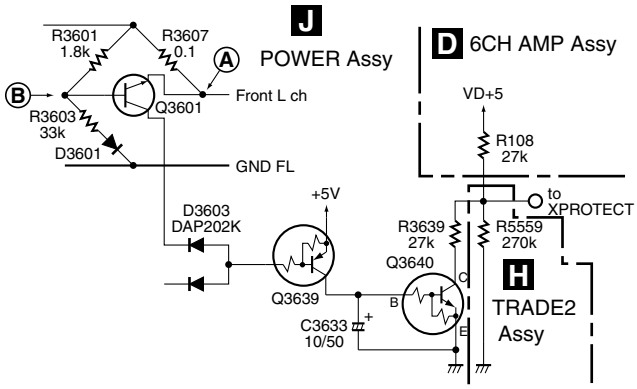
### ■ Conditions for the protect circuit operations

| | Voltage | | Conditions | FL display in Service Test mode |
|---|---|---|---|---|
| PROTECT | HI level | >3.55V | Normal | |
| | MID level | 1.8V - 3.5V | The unit is shut down because of an abnormality. | PRTCT WNG |
| | LO level | <1.8V | The unit is shut down because of a failure. | PRTCT ERR |
| VDET | HI level | >4.25V | The unit is shut down because of a failure. | DVD PRTECT |
| | MID level | 3.3V | Normal | |
| | LO level | <2.5V | The unit is shut down because of an abnormality. | DVD PRTECT |

The possible failures for each error message are as follows:
PRTCT WNG:
• The Speaker terminal became overloaded because of short-circuit. (See ①.)
PRTCT ERR:
• The main power supply became LO level because of short-circuit or disconnection of connectors. (See ②.)
• Disconnection of the FAN connector or interruption of rotation of the fan (See ③.)
• DC was generated at the output because of a failure in the AMP system, etc. (See ④.)
• Abnormal temperature was detected by the thermistor. (See ⑤.)
DVD PRTECT:
• An error was generated in the main power supply inside the DVDM. (See ⑥.)

## ■ Protection circuit that activates against a PRTCT WNG error

### ① When the Speaker terminal becomes overloaded




In Normal mode, the speaker (6 ohms) is connected between the FL and GND FL points. Because the voltage at Point Ⓐ is higher than that at Point Ⓑ, Q3601 does not operate.

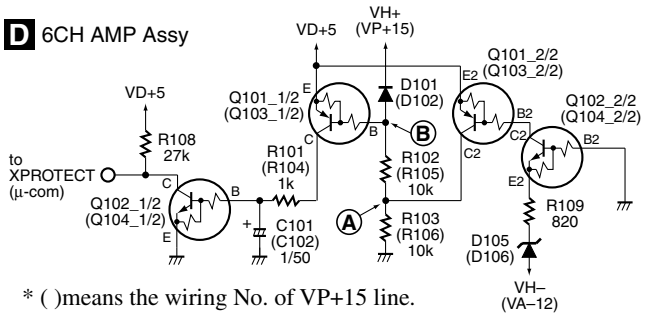
If the resistance between the FL and GND FL points becomes 1.83 ohms or less, Q3601 begins to operate, Q3639 is turned on, Q3640 (E, C, and B)is turned on, and the level of XPROTECT becomes MID.
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

## ■ Protection circuit that activates against a PRTCT ERR error

### ② When the main power supply becomes LO level because of short-circuit or disconnection of connectors

#### ② -1 Short-circuit-detection circuit for the amplifier power circuit (VH+[VP+15], VD+5, -12 V [VA-12])

Circuit for shutting the power off when VP+15, VD+5, or VA-12 is short-circuited to ground (GND)




* ( )means the wiring No. of VP+15 line.

- In Normal mode, as Q101 (Q103) (E2, B2, C2) and Q102 (Q104) (E2, B2, C2) are on, the voltage at Point Ⓐ is about 5 V. The voltage at Point Ⓑ is therefore about the same. As Q101 (Q103) (E, C, B) is off, Q102 (Q104) (E, C, B) is also off.

**(1) When VH+(VP+15) is short-circuited to GND**

As the voltage at Point Ⓑ becomes almost ground potential, and Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

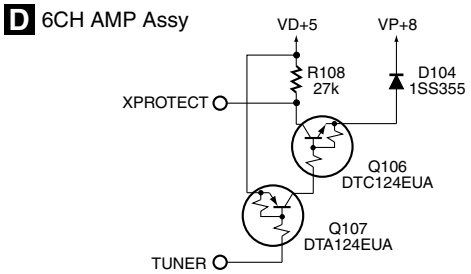
**(2) When VH-(VA-12) is short-circuited**

As the electric potential of VE at Q102 (Q104) (E2, C2, B2) becomes the same as that at VB, Q102 (Q104) (E2, C2, B2) is turned off. Following this, Q101 (Q103) (E2, B2, C2) is turned off, which changes the voltage at Points Ⓐ and Ⓑ to a value other than 5 V. Therefore, Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

**(3) When VD+5 is short-circuited**

The level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

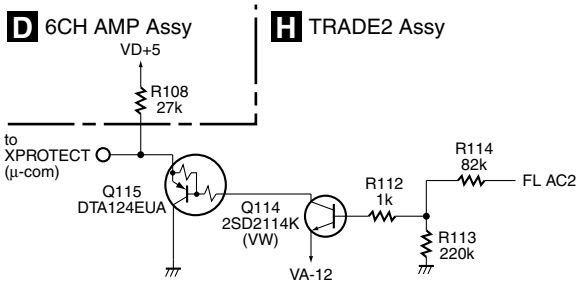
#### ② -2 Short-circuit-detection circuit for the DVD power supply (VP+8)




As the TUNER line is fixed to GND level, Q107 is always on. If the level at VP+8 falls to GND level because of short-circuit, etc., Q106 is turned on, and the level of the XPROTECT line becomes low.

← The microcomputer detects the XPROTECT level and shuts the power to the unit off.

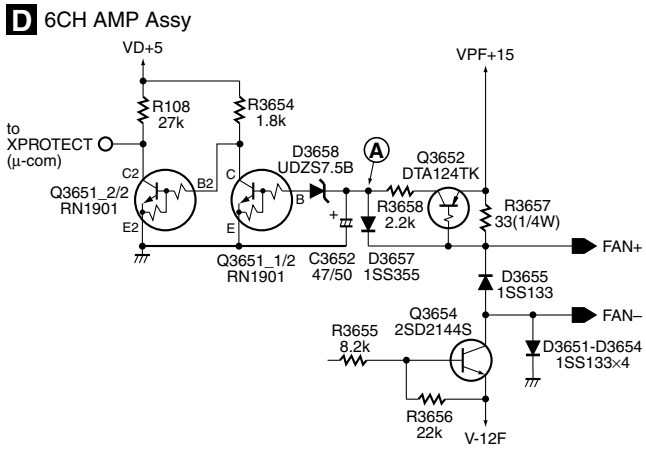
#### ② -3 Short-circuit-detection circuit for VFDP




If VFDP is short-circuited to GND, or if the DC electric potential at FL AC1 becomes GND level (in Normal mode: about -27 V) because of a failure in the DC bias circuit of FL AC1, Q114 then Q115 are turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

### ③ When the FAN connector is disconnected or when rotation of the fan is interrupted

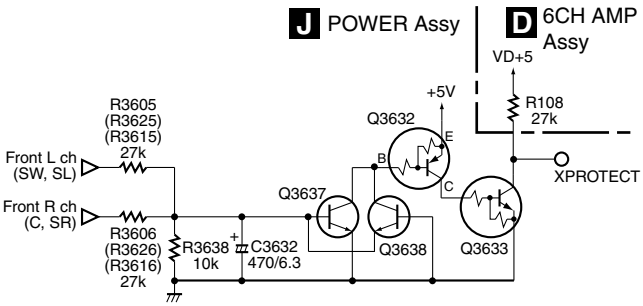



If no fan is connected between FAN+ and FAN-, or when the fan cannot rotate because of a foreign object caught in the blades, the BASE of Q3652 becomes OPEN, and Q3652 and Q3651-1/2 (E, C, B) are turned off. Then Q3651-2/2 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

When FAN+ and FAN- are short-circuited, the electric potential at Point Ⓐ becomes higher than GND level by the addition of the values at D3656 and D3657. As this value is lower than that at D3658, Q3651 (E, C, B) is turned off, Q3651 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

## ④ When DC is generated at the output because of a failure in the AMP system, etc.




• In Normal mode, both Q3637 and Q3638 are off.

(1) When positive (+) DC voltage is generated at the SP terminal

When positive (+) DC voltage is generated at the L or R channel, and VB of Q3637 becomes higher than that at the operation point, Q3632 (E, C, B) is turned on, and the level of XPROTECT becomes low.

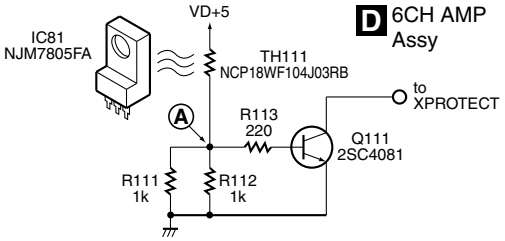
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

(2) When negative (-) DC voltage was generated at the SP terminal

Q3638 is turned on, and XPROTECT is activated.

## ⑤ When abnormally high temperature is detected by the thermistor

### ⑤ -1 IC81 abnormal temperature detection circuit

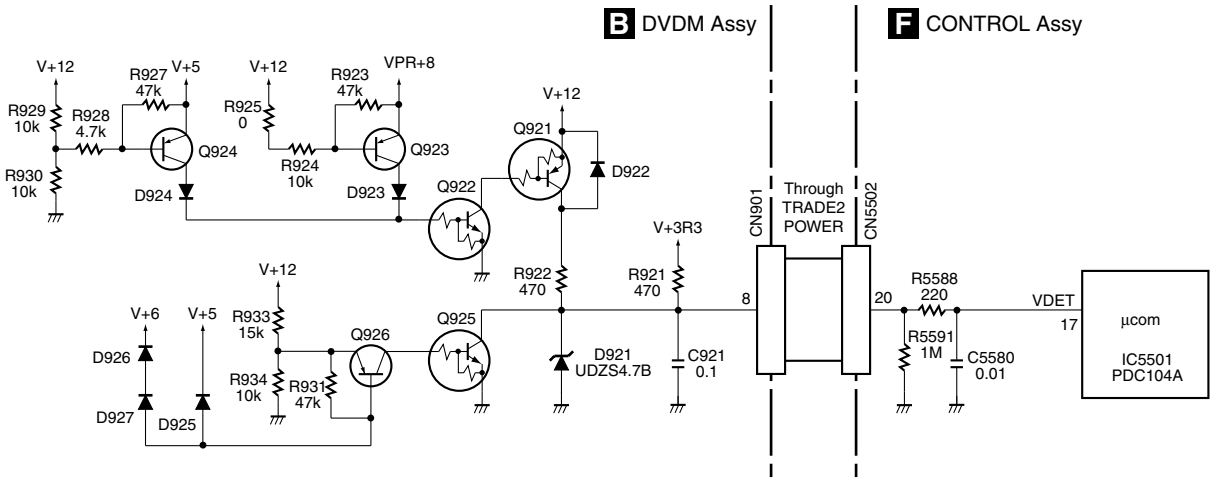



The voltage at Point Ⓐ becomes the divided voltage of TH111 and R111//R112 (combined resistance of parallel-connected resistors R111 and R112.) In Normal mode, the resistance at TH111 is much higher than R111//R112, and Q111 is off. (Note that the resistance at TH111 becomes lower as the temperature increases.) If the solder temperature at IC81 increases abnormally, the temperature at TH111 (thermistor) mounted closest to the land of IC81 increases accordingly, and the resistance at TH111 decreases.

When the temperature at TH111 reaches 90-110_C (varying according to conditions,) the voltage at Point (A) becomes high enough to turn Q111 on, and the level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

## ■ Protection circuit that activates against a DVD PRTECT error

⑥ The DVDM monitors the voltage of the main power supply by VDET signals.
In Normal mode, the VDET signal is at the MID level (3.3 V). In the following conditions, the VDET signal level becomes L or H, and the microcomputer is notified of this abnormality.




**Items to be detected by VDET**

(1) When the power voltages inside the DVDM become abnormal, as shown in the table below

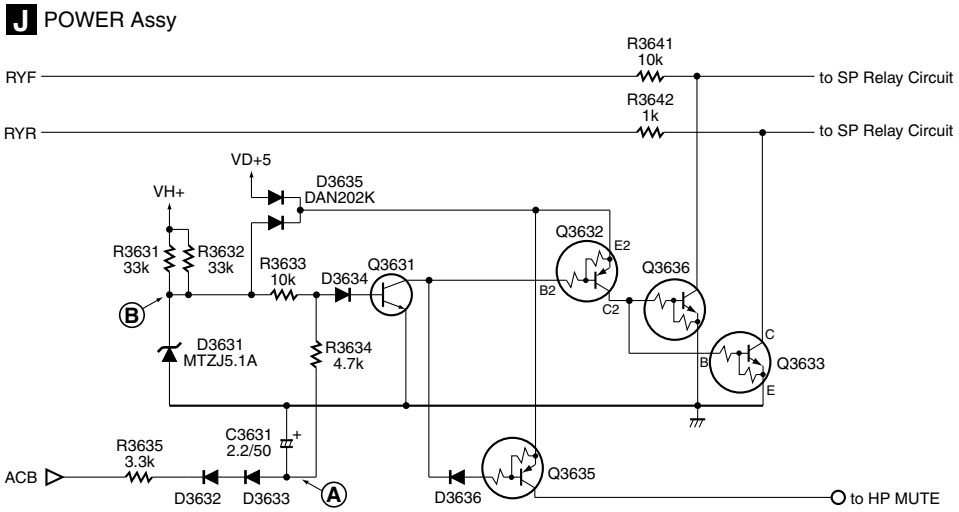
| Status | Power | Voltage | Operation | | | | | | | | VDET voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q923 | Q924 | Q922 | Q921 | D921 | D922 | Q926 | Q925 | |
| In Normal mode | | | off | off | off | off | off | off | off | off | Mid |
| When an abnormality is generat | VDVD+12 | <1V | (on) | (on) | (on) | (off) | off | on | off | off | L |
| | | >15.5V | off | off | off | off | off | off | on | on | L |
| | VPR+8 | <5.2V | – | off | off | off | off | – | on | on | L |
| | | >12.6V | – | on | on | on | on | – | off | off | H |
| | V+6 | <3V | – | – | – | – | – | – | on | on | L |
| | V+5 | <3.6V | – | off | off | off | off | – | on | on | L |
| | | >6.6V | – | on | on | on | on | – | off | off | H |
| | V+3R3 | <2.5V | – | – | – | – | – | – | – | – | L |
| | | >4.25V | – | – | – | – | (on) | – | – | – | H |

(2) When the VDET signal to the microcomputer is interrupted because of defective soldering of the 30-pin connector or incomplete insertion of FFC
→ The VDET level is lowered by the pull-down resistor (1 Mohms) on the side of the microcomputer.

## ■ Other protection circuit

### AC detection circuit

⑦ This is a protection circuit that prevents popping sounds in the Speaker and Headphones output when the AC power cord is connected or disconnected.




- The voltage at Point Ⓐ is a DC voltage which has been generated by half-wave rectification on the minus side of the AC power.
- The voltage at Point Ⓑ is approx. 5 V.

- The base voltage at Q3631 is a voltage between Points Ⓐ and Ⓑ divided by R3633 and R3634. As this voltage is negative (-) in Normal mode, Q3631 is off.
  When the AC power cord is disconnected and there is no AC power input, the base voltage at Q3631 becomes +0.6 V or more, and Q3631 is turned on. Then, the operations below follow.

**(1) SP Relay**

Q3632 (E2, C2, B2), Q3633, and Q3636 (E, C, B) are turned on, the line to activate the SP relay becomes low level, and the SP Relay is turned off.

**(2) HP MUTE**

Q3635 is turned on, and the MUTE circuit for HP is turned on.

# 7.4 CLEANING

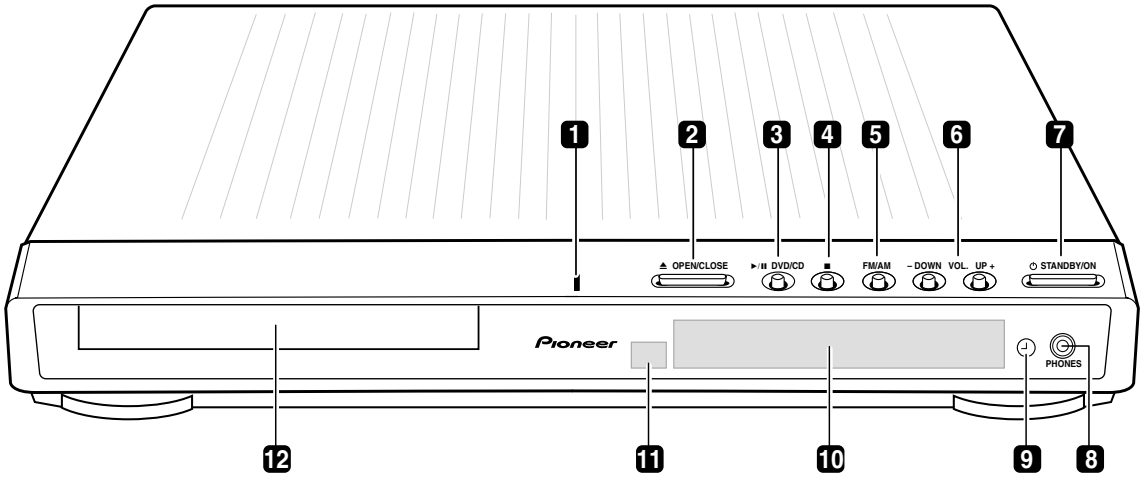
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

| Position to be cleaned | Cleaning tools |
|---|---|
| Pickup lenses | Cleaning liquid : GEM1004<br>Cleaning paper : GED-008 |

| Position to be cleaned | Cleaning tools |
|---|---|
| Fans | Cleaning paper : GED-008 |

# 8. PANEL FACILITIES

## Front panel




**1 Operation indicator**

**2 ⏏ OPEN/CLOSE**
Press to open/close the disc tray.

**3 ▶/II DVD/CD**
Press to switch to the **DVD/CD** function. Also press to start/pause/resume playback.

**4 ■**
Press to stop playback.

**5 FM/AM**
Press to switch to the tuner function, then to toggle between the FM and AM bands.

**6 VOLUME buttons**
Use to adjust the volume.

**7 ⏻ STANDBY/ON**
Press to switch the system on or into standby.

**8 PHONES jack**
Headphone jack.

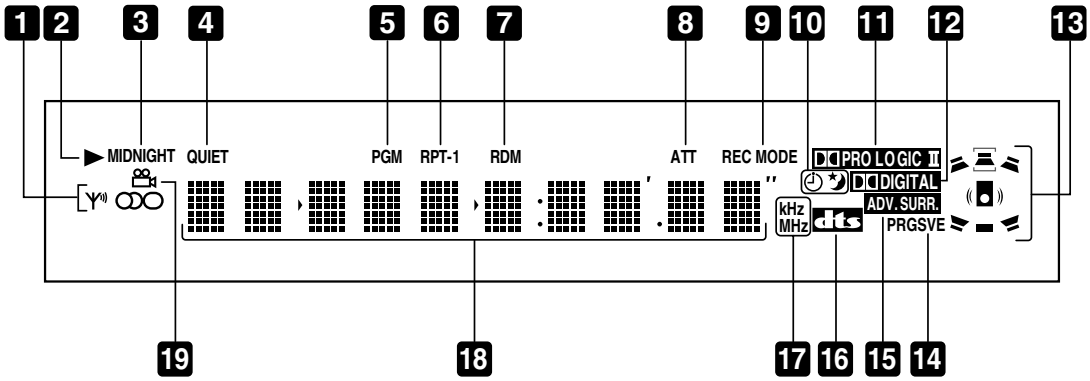
**9 Timer indicator**
Lights when the wake-up timer is set.

**10 Display**
See *Display* for detailed information.

**11 Remote sensor**

**12 Disc tray**

## Display




**1 Tuner indicators**

Lights when a broadcast is being received.

Lights when a stereo FM broadcast is being received in auto stereo mode.

Lights when FM mono reception is selected.

**2 ►**
Lights when a disc is playing.

**3 MIDNIGHT**
Lights when the Midnight mode is selected.

**4 QUIET**
Lights when the Quiet mode is selected.

**5 PGM**
Lights when a program list has been programmed.

**6 RPT and RPT-1**
**RPT** lights during repeat play. **RPT-1**lights during repeat one-track play.

**7 RDM**
Lights during random play.

**8 ATT**
Lights when the input attenuator is active for the currently selected analog input.

**9 REC MODE**
Lights when the Rec Mode is on.

**10 Timer indicators**

Lights when the wake-up timer is set.

Lights when the sleep timer is active.

**11 PRO LOGIC II**
Lights during Dolby Pro Logic II decoding.

**12 DIGITAL**
Lights during playback of a Dolby Digital source.

**13 Speaker indicators**
These show which speakers are being used to output the current source (they are not placement diagrams). The illustrations below show some example displays.

*5.1 channel surround sound*

*Stereo (2.1 channel) sound*

*3.1 channel sound with Dialogue enhancement on the center channel*

*5.1 channel surround sound with Virtual Surround Back mode active*

**14 PRGSVE**
Lights when progressive scan video output is selected.

**15 ADV.SURR.**
Lights when one of the Advanced or Front Surround listening modes is selected.

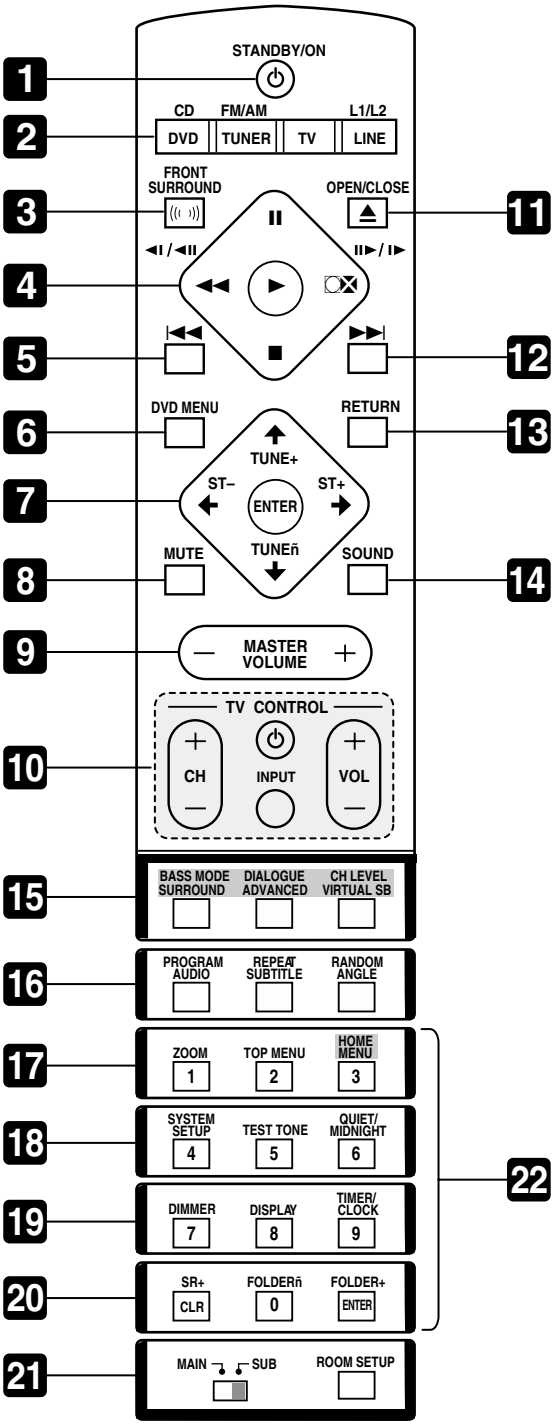
**16**
Lights during playback of a DTS source.

**17 kHz / MHz**
Indicates the unit of the frequency shown in the character display (**kHz** for AM, **MHz** for FM).

**18 Character display**

**19**
Lights during multi-angle scenes on a DVD disc.

## Remote control




**Important**

- Functions printed in green on the remote control are accessed by switching the **MAIN**/**SUB** switch to **SUB**.

**1 ⏻ STANDBY/ON**
Press to switch the system on or into standby.

**2 Function select buttons**
Press to select the source you want to listen to (**DVD (CD)**. **TUNER**,**TV**, **LINE**)

**3 FRONT SURROUND**
Use to select a Front Surround listening mode.

**4 Disc playback controls**

**►**
Press to start or resume playback.

**◄◄ and ◄I/◄II**
Use for reverse slow motion playback, frame reverse and reverse scanning.

**►► and II►/I►**
Use for forward slow motion playback, frame advance and forward scanning.

**II**
Press to pause playback; press again to restart.

**■**
Press to stop playback.

**5 I◄◄**
Press to jump to the beginning of the current chapter/track, then to previous chapters/ tracks.

**6 DVD MENU**
Press to display a DVD disc menu, or the Disc Navigator if a VR format DVD-RW, CD, Video CD/Super VCD, MP3, WMA or JPEG disc is loaded.

**7 Cursor buttons, ENTER and tuning buttons**

**Cursor buttons**
Use the cursor buttons ( ↑/↓/←/→ ) to navigate on-screen displays and menus.

**ENTER**
Press to select an option or execute a command.

**TUNE +/–**
Use to tune the radio.

**ST +/–**
Use to select station presets when listening to the radio.

**8 MUTE**
Press to mute all sound from the speakers and headphones (press again to cancel).

**9 MASTER VOLUME**
Use to adjust the volume.

**10 TV CONTROL**

**⏻**
Press to switch the TV on or into standby.

**INPUT**
Press to switch the TV input.

**CH +/–**
Use to select channels on the TV.

**VOL +/–**
Use to adjust the volume on the TV.

**11 ⏏ OPEN/CLOSE**
Press to open/close the disc tray.

**12 ▶▶|**
Press to jump to the next chapter/track.

**13 RETURN**
Press to return to a previous menu screen.

**14 SOUND**
Press to access the sound menu, from which you can adjust the DSP effect level, bass and treble, etc.

**15 Surround sound mode/sound enhancement buttons**

**SURROUND**
Use to select a Surround mode.

**ADVANCED**
Use to select an Advanced Surround mode.

**VIRTUAL SB**
Press to switch the Virtual Surround Back speaker effect on/off.

**BASS MODE**
Use to select a Bass Mode.

**DIALOGUE**
Use to select a Dialogue mode.

**CH LEVEL**
Use to adjust the speaker level.

**16 DVD/CD buttons**

**AUDIO**
Press to select an audio channel or language.

**SUBTITLE**
Press to display/change the DVD subtitle display.

**ANGLE**
Press to change camera angle during DVD multi-angle scene playback.

**PROGRAM**
Use to program/play a program list.

**REPEAT**
Use to select a repeat play mode.

**RANDOM**
Use to select a random play mode.

**17 ZOOM**
Press to change the screen zoom level.

**TOP MENU**
Use to display the top menu of a DVD disc in the play position (this may be the same as pressing **DVD MENU**).

**HOME MENU**
Press to display (or exit) the on-screen menu for Initial Settings, Play Mode functions, etc.

**18 SYSTEM SETUP**
Use to make various system and surround sound settings.

**TEST TONE**
Use to output the test tone (for speaker setup).

**QUIET/MIDNIGHT**
Use to select the Quiet and Midnight modes.

**19 DIMMER**
Press to switch between normal and dimmed front panel display.

**DISPLAY**
Press to display/change disc information shown on-screen.

**TIMER/CLOCK**
Press to display the clock and to access the timer menu.

**20 SR+**
Press to switch the SR+ mode on/off.

**FOLDER –**
Press to jump to previous folders.

**FOLDER +**
Press to jump to the next folder.

**CLR**
Press to clear an entry.

**ENTER**
Selects menu options, etc. (works exactly the same as the **ENTER** button in **7** above).

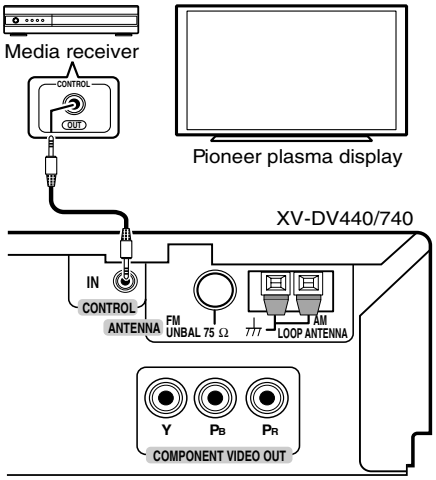
**21 MAIN/SUB**
Change from **MAIN** to **SUB** to access the functions/commands printed in green on the remote.

**ROOM SETUP**
Press to start Room Setup.

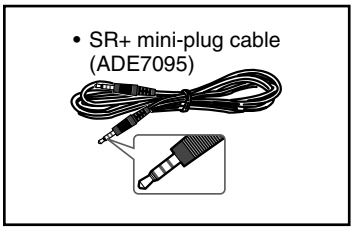
**22 Number buttons**
Use the number buttons for selecting chapters/tracks from a disc directly.

## Using this unit with a Pioneer plasma display

If you have a Pioneer plasma display (models PRO-1110HD, PRO-910HD, PDP-5040HD and PDP-4340HD), you can use an SR+ cable (see note below) to connect it to this unit and take advantage of various convenient features, such as automatic video input switching of the plasma display when the input is changed.




SERVICE PARTS




- **Use a 3-ringed miniplug SR+ cable to connect the CONTROL IN jack of this unit through a media receiver to the CONTROL OUT jack of your plasma display.**

Before you can use the extra SR+ features, you need to make a few settings in the unit. See *SR+ control options for Pioneer plasma displays* detailed instructions.

### Using the SR+ mode with a Pioneer plasma display

When connected using an SR+ cable, a number of features (such as automatic video input switching and volume muting on the plasma display) become available to make using this unit with your Pioneer plasma display even easier.

See also *SR+ control options for Pioneer plasma displays* for information on setting up the unit.

**1 Make sure that the plasma display and this unit are switched on and that they are connected with an SR+ cable.**

See *Using this unit with a Pioneer plasma display* above for more on connecting these components.

**2 To switch SR+ mode on/off, press SR+ (SHIFT+ 7).**

The front panel display shows the new setting; **SR+ ON** or **SR+ OFF**.

- If **SR+ Error** shows in the display, it means there is a communication problem between the unit and the plasma display. Check all connections and retry.

**Note**

- The 3-ringed SR+ cable from Pioneer is commercially available under the part number ADE7095. Contact the Pioneer Customer Support division for more information on obtaining an SR+ cable.
- You won't be able to use the remote sensor of this unit with the **CONTROL IN** jack of this unit connected to the **CONTROL OUT** jack of your plasma display. You can use the remote sensor of the plasma display (even in standby) as long as the power isnít switched off.
- The automatic volume muting feature is enabled separately; see *SR+ control options for Pioneer plasma displays.* (You can also use the System Setup menu to switch the SR+ mode of this unit.)
- If you disconnect the SR+ cable or switch the plasma display off while SR+ is on, the setting automatically reverts to **SR+ OFF**. This displays an error if you switch the input of the unit with the plasma display switched off. Likewise, if this unit is switched off, the link with the plasma display will be terminated.

## ■ Jigs list

| Name | Jig No. | Remarks |
|---|---|---|
| Service Remote Control Unit | GGF1381 | adjustment, diagnosis |
| DVD Test Disc (DVD-Video) | GGV1025 | Check of DVD-Video |
| CD Test Disc | STD-905 | Check of CD |
| Flexible Cable (18P) | GGD1160 | diagnosis of DVDM ASSY |
| Flexible Cable (30P) | GGD1222 | diagnosis of DVDM ASSY |
| Flexible Cable (23P) (×2) | GGD1266 | diagnosis of CONTROL ASSY |
| DVD Data Disc | GGV1133 (*) | diagnosis (ID data setting) |
| DVD Data Disc | GGV1174 (*) | diagnosis (ID data setting) |

(*) : GGV1133 is now released, however GGV1174 will be released in MAY/2004.
Until GGV1174 is released, use GGV1133 data disc.